DEPARTMENT OF THE INTERIOR, CANADA

HON. W. J. ROCHE, Minister; W. W. CORY, Deputy Minister.

FORESTRY BRANCH—BULLETIN No. 50

R. H. CAMPBELL, Director of Forestry

WOOD-USING INDUSTRIES OF THE PRAIRIE PROVINCES

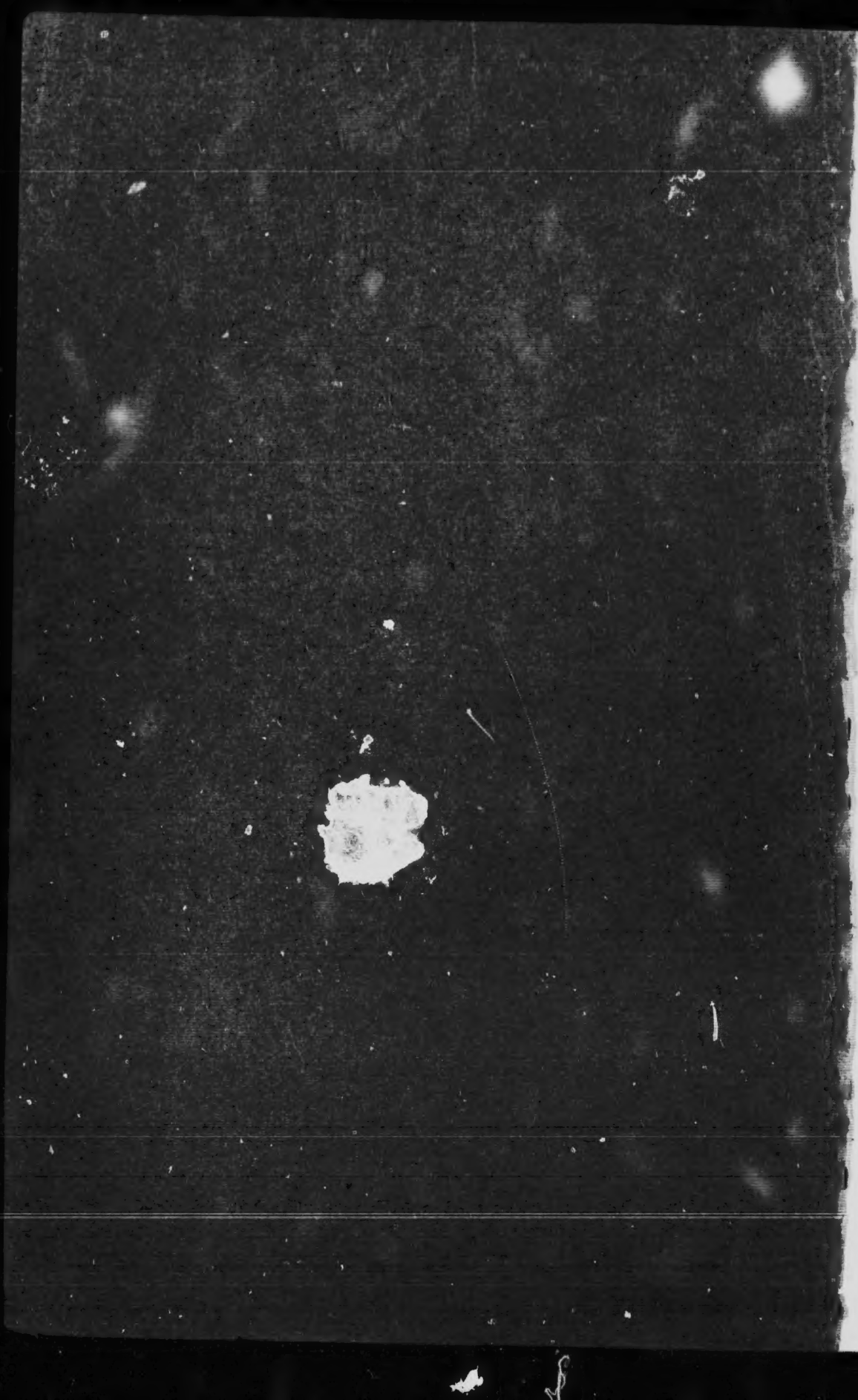
COMPILED BY

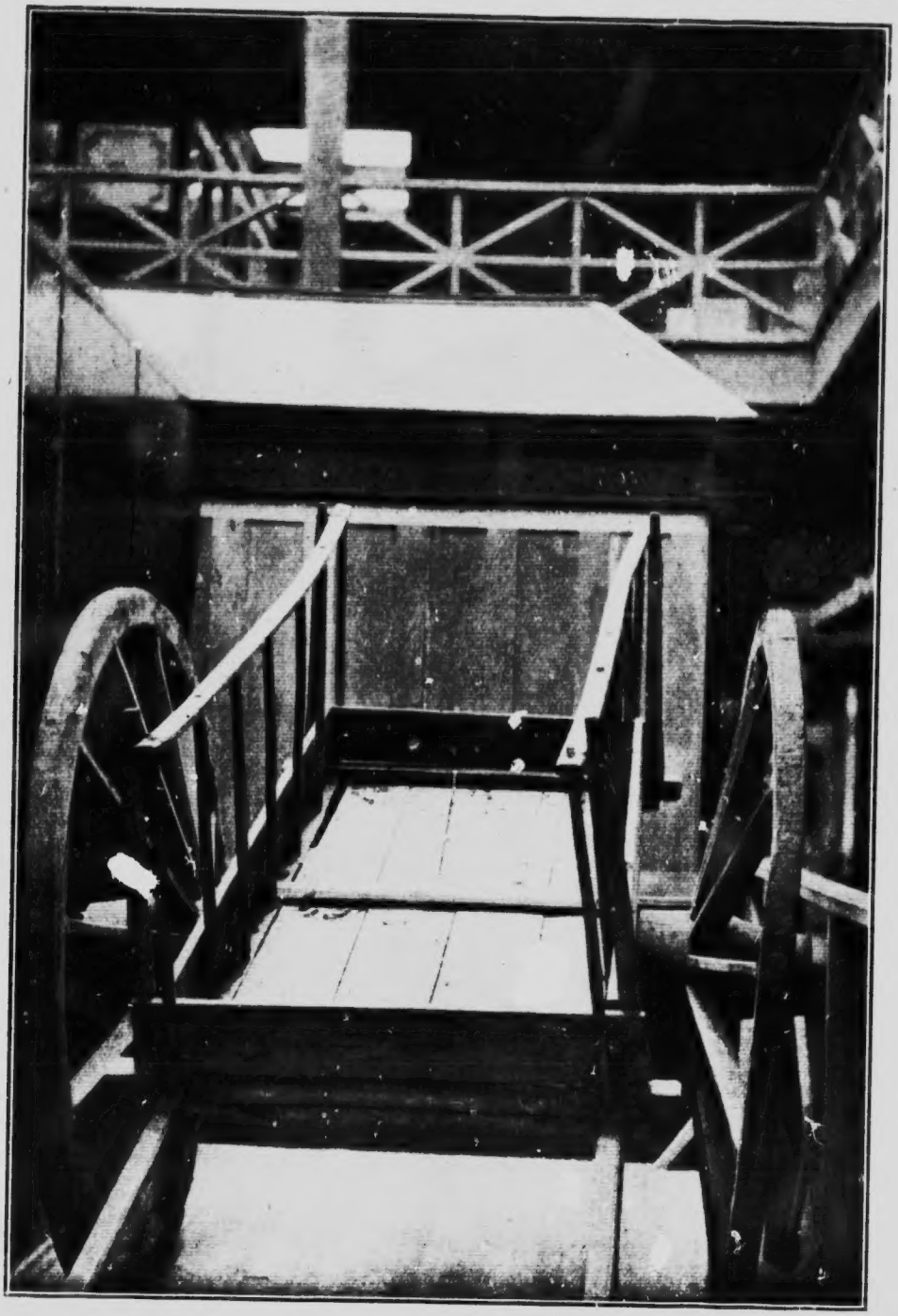
R. G. LEWIS, B.Sc. F.

ASSISTED BY

W. GUY H. BOYCE

OTTAWA
GOVERNMENT PRINTING BUREAU
1915





Red River Cart made entirely of Wood. Winnipeg Industrial Exposition.

DEPARTMENT OF THE INTERIOR, CANADA

Hon. W. J. Roche, Minister. W. W. Cory, Deputy Minister

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70962—1½

ACKNOWLEDGMENT.

This bulletin has been compiled from reports received from over three hundred manufacturers in the Prairie Provinces using wood as a raw material. The major part of the data was gathered by correspondence, supplemented by personal canvass and personal visits to many of the larger factories. In the great majority of cases, information was given without hesitation when the objects and nature of the bulletin were explained and it was made clear that the individual reports would be treated confidentially. The Forestry Branch wishes to thank the manufacturers for the interest they have taken in the matter, for their kindness in filling out the schedules sent them, and their courtesy toward the officers of the Forestry Branch who visited their factories.

LETTER OF TRANSMITTAL.

FORESTRY BRANCH,
DEPARTMENT OF THE INTERIOR,
OTTAWA, January 5, 1915.

SIR,—I beg to transmit herewith a report on the "Wood-using Industries of the Prairie Provinces" and to recommend its publication as Bulletin 50 of this Branch.

This report contains an account of the quantity, value, and source of supply of the different kinds of wood used by the industries of the provinces of Manitoba, Saskatchewan and Alberta. It includes detailed descriptions of the different classes of industries and of the properties of the different woods used in these industries. A discussion of the possible uses of the native woods of these provinces, a classified list of the commodities manufactured from different woods, and a classified directory of the manufacturers who supplied the data used in the compilation form an appendix to the bulletin.

I have the honour to be, sir,
Your obedient servant,

R. H. CAMPBELL,
Director of Forestry.

W. W. CORY, Esq., C.M.G.,
Deputy Minister of the Interior,
Ottawa.

TABLE OF CONTENTS

APPENDIX.

LIST OF ILLUSIRATIONS.

WOOD-USING INDUSTRIES

OF THE

PRAIRIE PROVINCES

For the purpose of showing the importance of wood as a raw material, the Forestry Branch has undertaken a series of studies of the wood-using industries of Canada. Bulletins for the province of Ontario and the three Maritime Provinces: Nova Scotia, New Brunswick and Prince Edward Island have already been published. This bulletin deals with conditions in the three Prairie Provinces: Manitoba, Saskatchewan and Alberta. Similar bulletins will be published dealing with Quebec and British Columbia.

In each case the bulletin has been primarily a study of conditions, and while the study has covered the more important firms it is not to be taken as a complete census of wood users.

KINDS OF WOOD.

TABLE A SUMMARY OF WOOD USED IN THE PRAIRIE PROVINCES, BY KINDS OF WOOD.

Kind of Wood	Per cent.	Quantity.	Value.	Average value.	Supply by Regions.				
					British Columbia.	United States.	East.	Prairie.	Foreign.
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M
Total	100·0	68,439	2,348,912	34 32	32,766	12,137	12,291	11,003	242
Douglas Fir	21·7	14,869	524,251	35 26	13,350	1,519			
Pine	20·3	13,923	406,756	29 21	5,551	1,902	6,470		
Spruce	17·8	12,165	190,760	15 68	2,644	477	1,184	7,860	
Cedar	15·2	10,422	337,001	32 34	10,422				
Poplar	8·6	5,885	136,741	23 24		108	2,647	3,130	
Oak	7·8	5,320	460,018	86 47		5,245	75		
Tamarack	2·6	1,770	41,288	23 33	431		5,323	13	
Birch	2·0	1,347	86,222	64 01	103	1,112	132		
Basswood	1·3	874	36,839	42 15		830	44		
Maple	0·5	374	20,585	55 04		71	303		
Elm	0·5	368	14,562	39 57		283	85		
Mahogany	0·3	228	34,521	151 41					228
Hemlock	0·3	175	4,960	28 34	156	19			
Ash	0·2	137	10,082	73 59		123	14		
Hickory	0·2	135	14,074	104 25		127	8		
Cottonwood	0·2	135	3,300	24 44	106	29			
Tulip	0·1	91	6,563	72 12		91			
Cherry	0·1	77	7,815	101 49		75	2		
Gum	0·1		4,113	58 76		70			
Cypress	*		1,450	65 91		22			
Walnut	*		2,729	151 61		16	2		
Hard Pine	*	10	612	61 20		10			
Spanish Cedar	*	9	1,712	190 22					9
Chestnut	*	6	451	75 16		6			
Circ. Walnut	*	4	800	200 00					4
Beech	*	3	255	85 00		1	2		
Sycamore	*	1	77	77 00		1			
Teak	*	1	375	375 00					1

*Less than one tenth of one per cent

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The wood of coniferous trees, commonly called softwood, predominates among the material used in the Prairie Provinces to the extent of 79·3 per cent of the total. Altogether twenty-eight different kinds of wood were reported and of these nine were softwoods and nineteen hardwoods. The first four woods on the list form 76·4 per cent of the total and these are softwoods. Only three native woods were reported, namely, spruce, poplar and tamarack.

Jack pine is sawn into lumber extensively in the region, but the greater part of it is used for rough construction and does not come under the scope of this investigation. The wood is usually sold mixed with white or red pine, and although in Canada many million feet are annually sawn into lumber, little or none of this is ever sold as jack pine.

Douglas fir is sawn into lumber in Alberta, but the product is sold with the imports from British Columbia. Birch and balsam fir are also sawn in this province, but only in small quantities for local use. In Manitoba cedar, birch, scrub oak, balsam fir, elm, ash and white and red pine, have been sawn, but are not important commercially in the province.

Of the total quantity of wood used, (68,439,000 feet) only 16·1 per cent was cut in the three provinces. Table B gives the details of the native grown woods used in the industries treated in this bulletin. Table C contains the statistics for the remaining 83·9 per cent which was purchased in British Columbia, the United States, Eastern Canada (Ontario and Quebec) and foreign countries.

The Prairie Provinces form a convenient market for the forest products of British Columbia, as is demonstrated by the fact that almost half the imported material comes from that province. The United States provided 21·1 per cent, of which the greater part was oak and other hardwood. Ontario and Quebec provided an almost equal quantity, 21·4 per cent, of which over half was pine. Mahogany, Spanish cedar Circassian walnut and teak were the only foreign woods used.

While the native grown woods in the Prairie Provinces include some species of the more valuable hardwoods such as oak, maple, birch, basswood, elm and ash, these woods do not occur in commercial quantities and will always be imported for certain purposes. A better understanding of the qualities and uses of the native woods should lead to an increase in their utilization in a region where wood is not abundant and in many cases entirely absent.

TABLE B—WOOD PURCHASED IN THE PRAIRIE PROVINCES.

Kind of Wood.	Total Quantity Purchased.	Supply by Regions		
		Manitoba.	Alberta.	Saskatchewan.
	M Ft. B. M.	M Ft. B. M.	M Ft. B. M.	M Ft. B. M.
Total	11,003	6,416	2,981	1,606
	7,860	4,983	1,472	1,405
Spruce	3,130	1,400	1,509	201
Poplar	13	13		
Tamarack				

TABLE 7. WOOD PURCHASED OUTSIDE OF THE PRAIRIE PROVINCES

Kind of Wood.	Total Quantity Purchased	Supply by Regions			
		British Columbia.	United States	East.	Foreign.
	M Ft. B. M.	M Ft. B. M.	M Ft. B. M.	M Ft. B. M.	M Ft. B. M.
Total	57,436	32,756	12,137	12,291	242
Douglas Fir	14,869	13,350	1,519		
Pine	13,923	5,551	1,902	6,470	
Cedar	10,422	10,422			
Oak	5,320		5,245	75	
Spruce	4,305	2,644	477	1,184	
Poplar	2,755		108	2,647	
Tamarack	1,757	434		1,323	
Birch	1,547	103	1,112	132	
Basswood	874		830	44	
Maple	374		71	303	
Elm	368		283	85	
Mahogany	228				228
Hemlock	175	156	19		
Ash	137		123	14	
Hickory	135		127	8	
Cottonwood	135	106	91		
Tulip	91		75		
Cherry	77		70	2	
Gum	70		29		
Cypress	22		22		
Walnut	18		16	2	
Hard Pine	10		10		
Spanish Cedar	9				9
Chestnut	6		6		
Circassian Walnut	4				4
Beech	3		1	2	
Sycamore	1		1		
Teak	1				1

DETAILED DESCRIPTIONS OF KINDS OF WOOD.

TABLE I. DOUGLAS FIR.

Industry.	Per cent.	Quantity.	Value.	Average Value.	Supply by Regions.	
					British Columbia.	United States.
		M Ft. B.M.	$	$ cts.	M Ft. B.M.	M Ft. B.M.
Total	100·0	14,869	524,251	35 26	13,350	1,519
Sash and Doors	86·5	12,868	467,485	36 33	11,659	1,209
Vehicles	9·7	1,443	39,275	27 22	1,293	150
Fixtures	1·2	175	6,743	38 53	175	
Furniture	1·1	160	3,093	19 33		160
Pumps and Tanks	0·7	111	4,203	37 86	111	
Agricultural Implements	0·3	48	1,744	36 33	48	
Patterns	0·2	32	832	26 00	32	
Coffins	0·1	18	439	24 39	18	
Miscellaneous	0·1	10	250	25 00	10	
Boats	*	2	126	63 00	2	
Boxes	*	2	61	30 50	2	

* Less than one tenth of one per cent.

Douglas fir (*Pseudotsuga mucronata*) is the only species of its genus of commercial importance. It is also called Oregon pine or spruce, Douglas pine or spruce, and red or yellow fir.

This tree grows on the Pacific coast reaching its maximum size in the Puget Sound district. It is found throughout southern British Columbia and crosses the Rocky mountains into Southern Alberta, but is not abundant on the eastern slope of that range.

In 1913 Alberta mills reported cutting 291,000 feet of this lumber.

The wood is used for building purposes almost entirely. While at first valued only for framing, the wood has gained popularity for more ornamental purposes, and is now used for all kinds of interior finish, flooring, panelling and doors. It is used frequently as sliced veneer because of the striking grain and figure it exhibits when used in this way. Its use in the other industries is not extensive at present, although ten of them reported the wood in small quantities.

The wood of Douglas fir is very strong, tough and elastic, fairly hard and durable, usually straight-grained and comparatively light in weight. It is difficult to work on account of its extreme hardness when seasoned, splits too easily for many purposes such as box making, but can be obtained in large dimensions free from defect and is a favourite structural timber for bridges, culverts, cribwork, mining operations and heavy framework of all kinds. It is used extensively in the round for piling and forms a large per cent of the railway ties used in Western Canada.

TABLE II.—PINE

Industry.	Per cent.	Quantity	Value.	Average Value	Supply by Regions.		
					British Columbia	United States	East
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M	M Ft. B.M
Total..	100·0	13,923	406,756	29 21	5,551	1,902	6,470
Sash and Doors	54 4	7,569	244,895	32 37	4,469	937	2,163
Boxes	18 9	2,634	39,454	14 98	112	404	2,118
Miscellaneous	12 1	1,689	42,775	25 33	20	....	1,669
Fixtures	4 2	579	22,106	38 18	455	79	45
Patterns	2 4	331	24,004	72 52	67	159	105
Coffins	2·2	303	6,820	22 50	150	....	153
Pumps and Tanks	2 0	279	10,110	36 24	143	176	
Furniture	1 9	262	7,561	28 63	145	115	2
Vehicles	1 6	220	7,247	31 65	14	2	213
Agricultural Implements	0 2	30	1,080	36 00	..	30	....
Signs	0 1	14	420	30 00	14	....	....
Boats	*	4	244	61 00	2	....	2

*Less than one-tenth of one per cent

The pine used in the Prairie Provinces is made up of lumber of many different species. The wood cut in the province itself is chiefly jack pine (*Pinus divaricata*) with a mixture of white pine (*Pinus strobus*) and red pine (*Pinus resinosa*) in small quantities in eastern Manitoba, and lodgepole pine (*Pinus Murrayana*) in western Alberta. Most of this native pine is crowded out of the market by the importations from British Columbia and Ontario, but large quantities find a local use in the three provinces.

The greater part of the imports come from Ontario and Eastern Canada, and are chiefly white pine, with smaller quantities of red pine, and perhaps a little jack pine mixed in.

British Columbia supplies what is commonly known as bull pine (*Pinus ponderosa*) or western yellow pine. This is often sold as white pine or merely designated as "B. C. pine." It is not one of the white or soft pines, but belongs to the same class as the red or Norway pine of Eastern Canada. With this is imported a smaller quantity of western white pine (*Pinus monticola*) also called silver pine or mountain white pine. Its wood is similar to that of the eastern white pine, but the tree is not abundant in British Columbia compared to other commercial species, is not found in pure stands and is not marketed extensively. Some lodgepole pine is probably imported from eastern British Columbia.

The wood of the white pines, eastern and western, is very similar and is the most valuable. It is, above all, easy to work, being soft and straight-grained. When properly seasoned it is only slightly affected by changes in humidity and does not swell, shrink, warp or check immoderately. The lumber has a great diversity of uses, but is a favourite material for sash, doors, finish and house work generally from shingles to sills. It is light and strong and holds nails well, and is used for boxes and crating material on this account. Its uses in most cases depend on the ease with which it can be worked, in combination with its other qualities.

The two red pines, eastern red or Norway pine and western yellow or bull pine, are harder, stronger woods, more difficult to work and more resinous, but often more valuable for structural work and frame work. The bull pine is used as a substitute

for white pine in its inferior uses. Red or Norway pine is used extensively for paving blocks, bridge work and railway ties.

Jack pine and lodgepole pine are the two inferior species. Their wood is weaker, more resinous, more liable to defect and of smaller available dimensions than the other species, and is used locally as a substitute for that of the more valuable pines.

TABLE III.—SPRUCE.

Industry.	Per cent.	Quantity	Value.	Average Value.	Supply by Regions			
					British Columbia.	United States.	East.	Prairie.
		M Ft. B.M.	$	$ cts.	M Ft. B.M.	M Ft. B.M.	M Ft. B.M.	M Ft. B.M.
Total.	100·0	12,165	190,760	15 68	2,644	477	1,184	7,860
Sash and Doors	64·6	7,853	110,950	14 13	2,193	387		5,273
Boxes	30·0	3,646	60,272	16 53	340	90	1,134	2,082
Furniture	2·1	258	9,514	36 88	4			254
Agricultural Imps.	0·8	100	1,800	18 00				100
Coffins	0·8	100	1,750	17 50			50	50
Fixtures	0·8	95	3,500	36 84	95			
Signs	0·4	50	1,458	29 16				50
Patterns	0·2	21	336	16 00				21
Pumps	0·2	19	580	30 53	10			9
Vehicles	0·4	12	2·3	24 42				12
Miscellaneous	*	6	159	26 50				6
Boats	*	5	148	29 60	2			3

*Less than one tenth of one per cent.

There are five species of spruce native to Canada. One of these, red spruce (*Picea rubra*) is confined to the eastern provinces and is not used in the Prairie Provinces. Two others, white spruce (*Picea canadensis*) and black spruce (*Picea mariana*) are found all the way across Canada from the Atlantic coast to the Yukon. Two others are distinctly western trees. Sitka spruce (*Picea Sitchensis*) is confined to the Pacific coast and Engelmann spruce is found throughout British Columbia crossing the Rocky mountains and coming down the eastern slopes into Alberta.

Of the wood used in the three Prairie Provinces over half is native grown, being chiefly white spruce with smaller quantities of black spruce and some Engelmann spruce from Alberta. The mills of the three provinces reported a cut of 219,071,000 board feet of spruce lumber in 1913, of which Saskatchewan contributed over half, Manitoba over a quarter and Alberta the remainder.

The imported material comes from British Columbia, the United States and the eastern provinces. The lumber from British Columbia is mostly Engelmann spruce from the mountain mills in the eastern part of the province with some Sitka spruce from the coast.

The imports from the United States are from Washington, Oregon and Montana and are of the same two species. Ontario contributes white and black spruce only.

The wood of the different species does not differ to a great extent. Generally speaking it resembles pine, but is almost tasteless and non-resinous, lighter in colour, less durable, tougher and of a finer grain.

The white spruce is the commonest tree and its lumber forms the greater part of the total production. Sitka spruce is the largest tree and produces the best clear lumber of large dimensions. Black spruce, as a rule, is confined to swamps

and low damp situations. It consequently grows very slowly and seldom attains large dimensions, but it produces the strongest wood with the finest grain and texture.

Spruce is Canada's most important lumber, the tree is abundant over an enormous range and its lumber is rapidly taking the place of pine. It is the most important pulpwood in America, being valued on account of its long, tough, colourless fibres and comparative freedom from resin. Its toughness recommends it for boxes and crating material and in these provinces its use is largely confined to building construction and boxes. It is used by twelve industries.

TABLE IV CEDAR.

Industry.	Per cent.	Quantity.	Value	Average Value.	Supply by Regions.
					British
		M ft. B. M.	$	$ cts. M	
Total ..	100.0	10,422	337,001	33 16	
Sash and Doors	99.1	10,327	333,407	32 28	
Coffins	0.6	58	1,350	23 28	
Fixtures	0.1	13	300	69 23	
Boats	0.1	12	689	57 42	
Furniture	*	5	180	60 00	
Miscellaneous	*	3	180	60 00	
Signs	*	3	120	40 00	
Patterns	*	2	140	70 00	
Vehicles	*	1	35	35 00	1

*Less than one tenth of one per cent.

There are two species of cedar native to Canada. Eastern or white cedar (*Thuja occidentalis*) is found growing from the Maritime Provinces to southeastern Manitoba with a small isolated occurrence north of Lake Winnipegosis. The tree has extensive local use and while it is used as lumber in Ontario and the East, [illegible] in the Prairie Provinces is evidently supplied by importations of the western species (*Thuya plicata*) commonly called western red or British Columbia cedar.

Cedar is noted for its durability when exposed to moisture and in this respect exceeds all other native coniferous woods. Like white pine it holds its place with little "working" even when exposed to alternate dryness and moisture. It is very easy to split and splits evenly because of its unusually straight grain. Western red cedar is the most important shingle wood in Canada at the present time.

In the Prairie Provinces the wood is used almost entirely for house building being used extensively for the more popular priced doors, sash and finish. Small quantities are used in eight other industries.

TABLE V POPLAR

Industry.	Quantity.	Value.	Average Value	Supply by Regions — United States.	East.	Prairie
	M ft. B.M	$	$ cts.	M ft. B.M	M ft. B.M	M ft. B.M
Total	100 0	5,885	136 74	23 24	108	2,647	3,130
Boxes	71 9	4,230	111,110	26 34	1 8	1,931	2,191
Miscellaneous	20 7	1,219	17,695	14 48	.	508	711
Coffins	6 8	400	6,800	17 00	. . . .	280	280
Sash and Doors	0 3	15	25	17 00	. .	.	15
Furniture	0 2	13	455	35 00	..	..	13
Fixtures	0 1	8	150	19 50	.	»	

There are five species of poplar that reach tree size in the Prairie Provinces. Two of these only are of commercial importance, three being cottonwoods which do not occur in marketable quantities. The native poplars are, aspen (*Populus tremuloides*), and balsam poplar, or balm (*Populus balsamifera*) and are probably the most widely distributed trees in America, growing abundantly from the Atlantic to the Pacific. They are found northward almost to the limits of tree growth and extend farther out into the prairie country than most other trees. At present the wood of these two species is used mostly for fencing, outbuildings, and firewood. When sawn into lumber the wood is used for boxes and crating almost entirely, although some firms have reported its use for coffins and shells as well as for interior finish, furniture and fixtures.

TABLE VI—OAK.

Industry.	Per cent.	Quantity	Value.	Average Value.	Supply by Regions. — United States.	East.
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M
Total	100 0	5,320	460,018	86 47	5,245	75
Sash and Doors	56 9	3,028	295,466	97 58	3,009	19
Vehicles	21 3	1,134	71,625	63 16	1,083	51
Furniture	11 9	633	52,827	83 50	628	5
Fixtures	7 6	403	32,728	81 21	403	
Agricultural Implements	0 9	47	3,756	79 91	47	
Miscellaneous	0 8	45	1,180	26 22	45	
Coffins	0 5	25	1,750	70 00	25	
Boats	0 1	5	656	131 20	5	

There are altogether twelve species of oak found in Canada, but of these only two or three are commercially important. White oak, *(Quercus alba)* the most valuable and most commonly used species, grows only in the eastern provinces and in the United States. It probably forms the greater part of the oak lumber imported into the Prairie Provinces. Red Oak *(Quercus rubra)* is more abundant, but not usually

so highly valued. It is of rare occurrence in southeastern Manitoba, but is abundant southward and eastward of this point. It is substituted for white oak in many cases. Burr oak (*Quercus macrocarpa*) is fairly common in southern Manitoba, but does not reach large size and is nowhere plentiful enough to form an important source of lumber supply.

The wood of the northern oak species may be roughly divided into two groups as regards their uses. The white oaks have hard, dense, heavy, tough, strong, durable wood. This has wide medullary rays which form the "flames" or "splashes" of hard, light coloured wood exhibited on the surface of quarter-sawn material, which is fashionable at the present time for decorative work on this account. The wood of the red oaks is not quite so strong, tough, hard or heavy as that of the white oaks. It is not nearly so dense, possessing many large sized pores or vessels running with the grain of the wood. These vessels are small and infrequent in the wood of the white oaks. The red oaks are usually less durable but the differences between the physical properties of the two groups are often disregarded and the wood of all species used indiscriminately. The medullary rays in the red oaks are usually narrower than in the white group and the quarter-cut material has a less striking figure. Over half the oak purchased in the Prairie Provinces is used for interior finish and hardwood flooring. It is used as lumber and frequently in the form of sawn veneer for doors, mantels and fixtures. Almost a quarter of the importations go into vehicle supplies where the wood is used for gear stock almost entirely. Office and house furniture take a fairly large proportion and the remainder is divided among five other industries.

TABLE VII. TAMARACK.

Industry	Per Cent.	Quantity.	Value.	Average Value	Supply by Regions.		
					British Columbia	East.	Prairie
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M	M Ft. B.M
Total	100·0	1,770	41,288	23 33	434	1,323	13
Miscellaneous uses	45·2	800	20,800	26 00		800	
Sash and Doors	29·4	520	8,750	16 83		520	
Vehicles	25·1	444	11,546	26 00	434		10
Fixtures	0·1	2	94	47 00		1	1
Boats	0·1	2	50	25 00		2	
Pumps and Tanks	*	1	28	28 00			1
	*	1	20	20 00			1

* Less than one tenth of one per cent.

The common tamarack (*Larix laricina*) is almost as widely distributed as the spruces and poplars, extending westward from the Maritime Provinces to the Yukon and northward almost to the limits of tree growth. The tamarack cut in the Prairie Provinces and that brought in from Ontario is all of this species. The importations from British Columbia are of a different species, the western tamarack or western larch (*Larix occidentalis*) which is a larger tree than the eastern species, but which is used for similar purposes.

The tamarack is almost entirely confined to swampy wet situations and is nowhere very abundant. The wood is hard, tough, strong, elastic and durable and closely resembles that of Douglas fir and the hard pines from the Southern States. Tamarack is used in the round for mining timbers, poles and fencing and is highly prized

because of its strength and durability. It is used for railroad ties wherever it can be obtained and is noted for its spike-holding qualities.

The wood purchased for use in the Prairie Provinces is used for paving blocks being treated with preservatives to increase its durability. It is also used for boxes, for crating heavy commodities, for house frames and flooring, and is used in small quantities by four other industries.

TABLE VIII BIRCH.

Industry.	Per Cent.	Quantity.	Value.	Average Value.	Supply by Regions.		
					British Columbia.	United States.	East.
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M	M Ft. B.M
Total	100·0	1,347	86,222	64 01	103	1,112	132
Sash and Doors	55·5	747	54,006	72 30	103	635	9
Furniture	20·3	273	8,887	32 55	.....	199	74
Fixtures	10·1	136	14,452	106 26	.....	134	2
Vehicles	6·2	84	4,420	52 62	.....	83	1
Miscellaneous	4·1	55	3,093	56 24	.....	10	45
Agricultural Implements	3·8	51	1,275	25 00	.....	51	.....
Boats	*	1	90	90 00	.....	.....	1

* Less than one-tenth of one per cent.

There are at least four species of birch represented in the lumber used in the Prairie Provinces. None of these is native except paper birch *(Betula alba* var. *papyrifera)* which does not occur in commercial quantities except in southeastern Manitoba. The wood brought in from Ontario and the United States is mostly yellow birch (*Betula lutea*) and cherry birch (*Betula lenta*) with, perhaps, a small quantity of paper birch. The British Columbia birch, the largest of the American species, is called western birch *(Betula occidentalis)*.

Birch lumber is used in these provinces chiefly for flooring and interior finish, and for fixtures and furniture. The wood of paper birch is almost white in colour and while tough and compact it is soft, weak and very perishable in moist situations. It is sometimes used for flooring. The wood of the other species in general is hard, heavy and strong with a fine even grain and texture. It takes a high polish and lacking a pronounced figure it can be easily stained to imitate other cabinet woods. Its use is rapidly increasing for all kinds of interior finish and cabinet work, and for framework in vehicles, implements and boats.

TABLE IX—BASSWOOD.

Industry.	Per Cent.	Quantity.	Value.	Average Value.	Supply by Regions.	
					United States.	Ontario.
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M
Total	100·0	874	36,839	42 15	830	44
Fixtures	29·9	261	13,083	50 13	238	23
Furniture	23·5	205	6,750	32 93	205	
Vehicles	20·1	176	9,232	52 45	155	21
Agricultural Implements	13·7	120	3,436	28 63	120	
Coffins	6·9	60	1,950	32 50	60	
Sash and Doors	5·5	48	2,208	46 00	48	
Miscellaneous	0·4	4	180	45 00	4	

There is only one commercially important basswood in America. The common basswood (*Tilia americana*) is found throughout the eastern and central United States, and in Canada in southern Ontario, Quebec and the Maritime Provinces. It is not found in the Prairie Provinces in commercial quantities, although it occurs in river bottoms in southern Manitoba and Saskatchewan. The United States supplies over nine-tenths of the basswood used in these provinces and Ontario the small remainder.

The wood is soft, tough, fine-grained and very easily worked. It holds its shape almost as well as any other wood in America and is preferred for panelling in vehicles and in cabinet work of all kinds. The toughness and lightness of the wood, together with its quality of taking paints and stains well, make it a favorite material for vehicle body work and box work in implement Poplar lumber, when properly seasoned, can be substituted for basswood in many of its uses. Red gum (*Liquidambar styraciflua*) is a common substitute in the east and in the United States.

TABLE X—MAPLE.

Industry.	Per cent.	Quantity.	Value.	Average Value.	Supply by Regions.	
					United States	East.
		M. Ft. B.M.	$	$ cts.	M. Ft. B.M.	M. Ft. B.M.
Total	100·0	374	20,585	55 04	71	305
Agricultural Implements	29·4	110	4,357	39 61	50	60
Vehicles	28·9	108	8,309	76 94	8	100
Furniture	18·2	68	2,825	41 54		68
Sash and Doors	17·4	65	3,963	60 97	11	54
Fixtures	3·7	14	700	50 00		14
Boxes	1·3	5	175	35 00		5
Patterns	0·5	2	120	60 00		2
Miscellaneous	0·3	1	96	96 00	1	
Pumps and Tanks	0·3	1	40	40 00	1	

The hard, or sugar, maple (*Acer saccharum*) is the most valuable species in Ontario, where most of the maple used in these provinces is produced. The soft maples, red maple (*Acer rubrum*) and silver maple (*Acer saccharinum*) are neither

so valuable technically nor so abundant as the first named species. The wood of the sugar maple is hard, tough, strong and above all very stiff. It is said to be liable to failure under sudden shock, but, if so, this fault does not detract from its popularity for frame work in vehicles and implements. The wood is almost universally used for heavy waggon axles. While the grain and figure are not particularly striking or beautiful (except the rare "bird's eye"), the wood is used extensively for furniture and interior finish. The wood is used altogether in nine industries.

The Manitoba maple (*Acer Negundo*) has wood entirely dissimilar to that of the other species, being creamy white in colour, soft, weak and perishable and of little or no commercial value at present. The tree is found throughout southern Manitoba and in river valleys as far west as eastern Saskatchewan.

ELM.

White elm (*Ulmus americana*) is the most abundant species on the lumber market. It is the only species of elm found as far west as southern Manitoba, but is only occasionally sawn into lumber in that province. The greater part of the lumber comes from Ontario and the Middle West States.

The wood has a wide range of uses covering almost every wood-using industry. It is noted for its toughness combined with hardness and strength. It is remarkably difficult to split and hard to season without warping and twisting. Rock elm (*Ulmus racemosa*) is tougher, harder, stronger and more durable than any of the other elms, but is comparatively rare and restricted as to distribution. It is found in southern Ontario, but not in any of the western provinces. The other American species are not important as sources of lumber. Birch is taking its place for waggon hubs, although elm is still the favourite material for this purpose. The wood is used for outside work on heavy rough furniture and for frames of the more expensive kinds. It is used for implements, vehicle framework and boat timbers.

MAHOGANY.

True mahogany (*Swietenia mahogani*) is a comparatively scarce wood, the supply of which is entirely inadequate for the demand. There are at least twenty other tropical woods which closely resemble this and which are, for all intents and purposes, equally valuable. These are cut and marketed as mahogany, but as this substitution is generally known there is no deliberate deception. Only about one third of the mahogany lumber on the market is true mahogany. In other cases woods which are inferior in physical qualities to either true mahogany or the accepted substitutes are stained to imitate it.

True mahogany is a wood of valuable physical characteristics apart from its rarity. It is hard, strong, dense and very durable, has a close, even, straight, grain. Quarter-cut material has a fine, beautiful figure. The surface is lustrous, takes a filler readily and is capable of taking a brilliant polish. The wood is fairly easily seasoned and holds its shape well. Its red colour turns to a deep wine shade with age.

The commercial supply of mahogany is drawn from tropical America and Africa. The wood is used for ornamental purposes almost entirely and is classed as a superior cabinet wood.

HEMLOCK.

The greater part of the hemlock lumber used in the Prairie Provinces comes from the Pacific coast and is the wood of the western hemlock (*Tsuga heterophylla*). The eastern species (*Tsuga canadensis*) may form a part of the wood imported from the United States. Neither species is found in the Prairie Provinces.

Western hemlock is a valuable material with many valuable qualities and few of the faults of its eastern relative. The wood is light, rather hard, straight-grained, tasteless, tough and, usually, white in colour. Unlike the eastern species it is easy to work, and free from cup shakes and warping. It has a uniform structure, so that the summer wood and spring wood both stand up well to a cutting edge, and the wood can be worked more smoothly than that of the eastern species, in which the spring wood is soft and corky. Its durability and strength are not remarkable but for ease of working, a handsome grain and finish and lightness the wood has considerable value. It has long been misunderstood on account of the existing prejudice against the name hemlock which suggests the eastern tree. Lumbermen have attempted to overcome this difficulty by selling the wood under such names as Alaska pine, gray fir, Prince Albert fir, and others, and in some cases by mixing the lumber with that of Douglas fir and mountain spruce. Lately the policy has been to sell the wood under its own name, on its own merits, which will eventually bring it into popularity.

It is used at present for pulp, railway ties, poles, piles and bridge timbers, but usually as a substitute where other woods cannot be obtained as cheaply. It is well adapted for all kinds of house finish and framing, and is an excellent box and cooperage material. Edge-grain hemlock makes an excellent, smooth-wearing, floor, which will keep its place in dry situations.

It takes a high polish, is non-resinous, and shows a pleasing grain when carefully sawn. While not to be compared with oak, walnut, cherry or mahogany, it can be classed as a very useful cabinet wood.

ASH.

There are two classes of ash lumber imported from the United States and from Ontario. White ash (*Fraxinus americana*) is the commonest and most valuable for certain work. Its wood is noted for toughness and flexibility, although it is also fairly hard, heavy and strong. It is a favourite material for light vehicle gear stock, taking the place of hickory to a large extent. It is also used for light framework of all kinds and for tool handles. Three minor species, red, green and blue ash are sometimes used as substitutes for white ash.

Black ash (*Fraxinus nigra*) is sometimes used as a substitute for white ash, but as its wood is much softer and weaker it is not used extensively in this way. The wood is more durable than white ash and being easier to work and possessing a striking figure it is more often used for cabinet work. It closely resembles plain oak and is often used in its place for interior finish in houses.

Black, red and green ash are found in Manitoba, but are nowhere abundant and are only used locally.

HICKORY.

The hickory lumber used in these provinces comes chiefly from the United States, the centre of the supply being the States of Tennessee and Kentucky. The lumber is cut from many different species of which the most important are shagbark hickory (*Carya ovata*) and mockernut hickory (*Carya alba*).

The small quantity reported from Ontario is largely made up of the same species. None of the hickory species is found growing in the Prairie Provinces. Hickory is, and always has been, the favourite material for vehicle gear stock in America. The wood is exceedingly hard, tough, strong and flexible. It is specially valuable for light vehicles, because its strength permits the use of spokes, rims, hubs and shafts of small cross section. It is used for axe handles wherever it can be obtained as no other wood has proved to be its equal for this purpose. The greater part of the hickory used in these provinces is imported in the form of finished products, vehicle stock, implements, tool handles, etc., and only a relatively small quantity is imported in the rough, and it is then used chiefly for repair work.

COTTONWOOD.

The cottonwoods are in reality a group of poplar species, so called on account of the cottony down on their seeds. Their wood is usually superior to that of the other poplars and is valued for its toughness, lightness and ease of working. The lumber from British Columbia is the product of the black cottonwood (*Populus trichocarpa*) which is not found east of that province. The tree from which the United States importation is obtained is the common cottonwood (*Populus deltoides*) which is abundant throughout the Mississippi and Missouri valleys. This tree is found in river bottoms crossing the International Boundary into the Prairie Provinces, but is nowhere of commercial importance in Western Canada. Two other cottonwoods are found in the southern part of these provinces, also confined to river bottoms. They sometimes reach commercial sizes but do not occur in sufficient quantities to be used other than locally. These are lanceleaf cottonwood (*Populus acuminata*) and the narrow leaf cottonwood (*Populus angustifolia*).

The wood is used in the manufacture of excelsior, for vehicle box and body work, for "inside work" on furniture and for boxes and crating.

TULIP.

The wood of the tulip tree (*Liriodendron Tulipifera*) is often sold as whitewood or yellow poplar. The tree is found, but is not abundant, in the southernmost part of Ontario. It is not found elsewhere in Canada. The commercial supply comes from the United States, the tree reaching its highest development in the lower Ohio basin. The wood is very soft, almost spongy in fact, and while not strong is tough and very durable. It is easy to season and easy to work and splits readily, having a straight fine grain and a fine even texture. It is free from taste or odor, takes paint readily and above all it is noted for keeping its shape when seasoned. It is used with basswood, which it closely resembles, for vehicle body work, panelling, inside finish, veneer backing, and cross-banding.

CHERRY.

While this is one of the most expensive of American cabinet woods on account of its scarcity it is also one of the most valuable because of its superior technical qualities. Only one species, black cherry (*Prunus serotina*) reaches saw log size. This tree is found in southern Ontario and southern Quebec, but the supply in Eastern Canada is almost exhausted. The lumber imported from the United States comes chiefly from the Appalachian region, although the supply there is rapidly disappearing.

The wood has a deep reddish brown colour deepening with age. Quarter-cut material has an attractive grain and the wood takes a beautiful polish. Apart from its attractive appearance, it is hard, heavy, strong and straight-grained. It seasons easily and well, is fairly easy to work, and holds its shape without shrinking, swelling, checking or warping. It is highly prized for the better kinds of cabinet work, such as interior finish in houses and trimming in automobiles and other vehicles and cars. It is also used in these provinces for patterns and for backing cuts and engravings, where its appearance counts for nothing and its hardness and permanency of form are most important.

GUM.

Red gum (*Liquidambar styraciflua*) is a comparatively new commercial wood. The difficulties encountered in its seasoning practically prohibited its use for many years while other similar woods could be easily obtained. The wood warps and twists to an extraordinary extent when improperly seasoned. The method used at present consists in a thorough steam drying direct from the saws, and the material, so prepared, is an excellent cabinet wood, comparatively cheap and obtainable in wide boards free from defect. It is a very common tree in the Southern States on rich bottom lands, but is not found north of the state of Connecticut.

The wood is sometimes sold as "satin walnut" and when carefully finished makes an excellent imitation of Circassian walnut.

It is moderately strong and has a fine uniform texture. It can be easily steam-bent, takes stains well and can be highly polished. It is an excellent material for "inside work" in furniture, fixtures, etc., and for vehicle box and body work as it holds its shape well when carefully seasoned. It is being rapidly substituted for basswood, tulip, cottonwood, and other "inside" cabinet woods because of its cheapness, and is also rapidly coming into prominence on its merits as an attractive-grained wood for "outside" or decorative work.

CYPRESS.

The bald cypress of the Southern United States (*Taxodium distichum*) is often styled "The Wood Eternal" because of its durability. It outlasts most of our native American woods in moist situations and is especially valuable for veranda and greenhouse construction and foundation work. It is somewhat similar in structure to the southern pines, but is softer and easier to work and has very little resin. It is rather difficult to season but is an important competitor of cedar for many purposes.

WALNUT.

The black walnut (*Juglans nigra*) is probably the rarest and most valuable of the native north American cabinet woods. The fashion in furniture has changed and walnut is not so poplar now as white oak or mahogany, but the enormous demand for the wood in the past has resulted in the commercial extinction of the tree. Walnut veneer is used in fairly large quantities but solid walnut furniture is not extensively manufactured. The wood like cherry and mahogany has excellent technical qualities as well as as attractive surface and colour.

HARD PINE.

The proximity of the supply of Douglas fir has so far kept this wood out of the market in the three Prairie Provinces. The two woods are very similar in their characteristics and the question as to which is the more valuable for structural work is still undecided. The wood of the hard pines is usually harder and heavier than Douglas fir. The supply of lumber comes entirely from the Southern States and is made up of at least four species of trees. Longleaf pine, (*Pinus palustris*) is the strongest material with the finest grain. Cuban pine (*Pinus heterophylla*) is similar to this but is not abundant on the market. Shortleaf pine (*Pinus echinata*) is sometimes equal to longleaf depending on the conditions under which it grows. It is usually weaker and coarser-grained. Lobolly pine (*Pinus tæda*) is the weakest, least durable and coarsest-grained wood of the group. These trees are cut and their lumber often sold mixed on the market or graded according to their fineness of grain and density, irrespective of the different species. The lumber is sold collectively as Georgia pine, pitch pine, yellow pine, southern pine or hard pine. Of late years its uses have extended from those of a mere structural timber for heavy framework to those of a cheap cabinet wood, and at present the wood is used for flooring and finish of all kinds.

SPANISH CEDAR.

This is a highly ornamental cabinet wood, imported usually in the form of thin veneer. The tree (*Cedrella odorata*) grows in Mexico, Cuba and the West Indies, and is often cut and sold with mahogany which it closely resembles. The wood is brownish red in colour with a straight, even, compact grain and a pleasant fragrance. It is easily worked and very durable.

CHESTNUT.

The wood of this tree is used extensively in Eastern Canada and the United States where it is the favourite material for core stock in built-up veneered cabinet work. It is very durable, takes glue well and is soft and easy to work. The tree (*Castanea dentata*) grows in southern Ontario and southern Quebec and is quite abundant in the Eastern States. It is liable to attacks of fungus and insect, and material free from defects is difficult to obtain. It is used in the Prairie Provinces for core stock and occasionally for "outside work."

CIRCASSIAN WALNUT.

The European Walnut (*Juglans regia*) was originally a native of Persia, but has been cultivated in many other countries for centuries. It is sold under many different names depending on differences in grain and figure which are usually due to conditions of growth. The wood is used chiefly in the form of veneer for fine cabinet work of different kinds.

BEECH.

This is one of the commonest hardwoods in Eastern Canada. It is not found west of Lake Huron in this country, but is very abundant in the United States.

The wood of this tree (*Fagus grandifolia*) is hard, stiff, strong and tough. It is sometimes cross-grained and is very perishable when exposed to moisture. When not thoroughly seasoned it is likely to split, warp and shrink. The wood, however, takes a good polish and makes excellent flooring. It is a good general utility wood for moderate-priced house finish, furniture and fixtures and makes a good material for heavy vehicle stock.

SYCAMORE.

The wood of the sycamore (*Platanus occidentalis*) is similar to that of beech in many respects. Quarter-cut material has a rather startling grain and figure, sometimes attractive for furniture or interior finish. The tree is comparatively rare in southern Ontario and more common throughout the Mississippi valley.

TEAK.

The wood of the teak (*Tectona grandis*) is imported from central and southern India and Burma. It is dark brown in colour with a pronounced grain and a very disagreeable odour not unlike shoe leather. The wood feels decidedly greasy to the touch and is very durable. It does not split, crack, warp or alter its shape after seasoning and is not affected by contact with iron. It has been a favourite material in spite of its cost for ship-building for many years on account of its strength and durability.

WOOD-USING INDUSTRIES.

A wood-using industry ,as described in this bulletin, is one wherein wood in the form of rough lumber, logs or cordwood is either manufactured into some finished, merchantable product or is used indirectly in its manufacture or packing. This excludes the manufacture of rough lumber and the use of wood for bridges, wharfing, fencing, sidewalks and other rough construction. The rough lumber which is used in the construction of buildings ,and which is not specially prepared for that purpose, is not included where it is possible to separate this from sash, doors, window and door casings, flooring and other material which has been specially prepared in a builder's factory for use in house construction. About three hundred firms using wood in this way supplied the information on which this bulletin is based.

These firms were divided into twelve groups of closely related industries. Wherever less than three firms reported the manufacture of a certain class of commodity the details of its manufacture were included under the class of "Miscellaneous." All reports received from individual firms were treated as strictly confidential and care was taken in summarizing the results to avoid disclosing details relating to the private business of any one firm.

TABLE D—SUMMARY OF WOOD USED IN THE PRAIRIE PROVINCES BY INDUSTRIES.

Industry.	Per cent.	Quantity.	Value.	Average value.	Supply by Regions.				
					British Columbia.	United States.	East.	Prairie.	Foreign.
		M Ft. B.M	$	$ c.	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M
Total....	100·0	68,439	2,348,912	34 32	32 766	12,137	12,291	11,003	242
Sash & Doors.	63·3	43,321	1,545,017	35 66	29,335	6,340	2,245	5,298	103
Boxes.. ..	16·2	11,058	220,592	19 95	475	602	5,708	4,273	
Miscellaneous	5·7	3,915	89,286	22 80	99	75	3,023	717	1
Vehicles. . ..	5·4	3,719	180,203	48 48	1,308	1,979	414	13	5
Furniture. ...	3·1	2,148	105,764	49 24	152	1,479	226	267	24
Fixtures.....	2·7	1,869	120,987	64 73	763	908	94		104
Coffins.	1·4	964	20,859	21 64	226	85	403	250	
Ag. Imps.....	0·7	509	17,618	34 61	48	299	62	100	
Pumps..	0·6	411	14,953	36 38	224	177	.....	10	
Patterns.	0·6	395	26,442	66 94	101	162	109	21	2
Signs	0·1	67	1,998	29 82	17	... .	. ....	50	
Boats	0·1	63	5,103	81 00	18	31	7	4	3

Sheaf Loader. Brandon Machine Works.

TABLE I—AGRICULTURAL IMPLEMENTS.

Kind of Wood.	Per cent	Quantity.	Value.	Average Value.	Supply by Regions.			
					British Columbia.	United States.	East.	Prairie.
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M
Total	100·0	500	17,618	34 61	48	299	62	100
Basswood	23·6	120	3,436	28 63		120		
Maple	21·6	110	4,357	39 61		50	60	
Spruce	19·6	100	1,800	18 00				100
Birch	10·0	51	1,275	25 00		51		
Douglas Fir	9·4	48	1,744	36 33	48			
Oak	9·2	47	3,756	79 91		47		
Pine	5·9	30	1,080	36 00		30		
Elm	0·2	1	35	35 00			1	
Ash	0·2	1	35	35 00			1	
Hickory	0·2	1	100	100 00		1		

The wood used by this industry in the Prairie Provinces is employed chiefly for repair work. The greater part of the implements used are manufactured either in Eastern Canada or the United States. Implements which are specially adapted for certain western conditions are sometimes made to order in the provinces themselves. Basswood is used for light boxwork where toughness and lightness are more important than strength.

Maple, birch, oak and elm are used for heavy framework, spruce, Douglas fir and pine for lighter framework and boxwork. Ash and hickory are used for wheels and special parts. Spruce is the only native wood used and with the exception of maple from Ontario, practically all the hardwood is imported from the United States.

TABLE II BOATS.

Kind of Wood.	Per cent	Quantity.	Value.	Average Value.	Supply by Regions.				
					British Columbia.	United States.	East.	Prairie.	Foreign.
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M
Total	100·0	63	5,103	81 00	18	31	7	4	3
Cypress	28·6	18	1,134	63 00		18			
Cedar	19·0	12	689	57 42	12				
Hard Pine	12·7	8	560	70 00		8			
Oak	7·9	5	656	131 20		5			
Spruce	7·9	5	148	29 60	2			3	
Pine	6·3	4	244	61 00	2		2		
Mahogany	3·2	2	700	350 00	2				2
Douglas Fir	3·2	2	126	63 00					
Elm	3·2	2	77	38 50			2		
Teak	1·6	1	375	375 00					1
Tamarack	1·6	1	28	28 00				1	
Birch	1·6	1	90	90 00			1		
Walnut	1·6	1	200	200 00			1		
Ash	1·6	1	76	76 00			1		

Sheaf Loader. Brandon Machine Works.

The manufacture of small pleasure boats, fishing boats for the larger lakes and steamers and freight boats for the navigable lakes and rivers is an important industry in the Prairie Provinces, although it comes last on the list as far as quantity of wood used is concerned. As there is practically no way of getting boats into certain regions of the country it is absolutely necessary that they should be built where they are to be used.

Cypress, cedar, spruce and tamarack are used for outside planking. Hard pine, oak, Douglas fir, elm, tamarack and birch are used for framework; spruce, pine and Douglas fir for flooring, ceiling, decks and finish generally. Oak, mahogany, teak, birch, walnut and ash are all used in small quantities for decorative finish and trimming.

The United States provides all the cypress, hard pine and oak, which together make about half of all the wood used.

TABLE 3.—BOXES AND CRATING.

Kind of Wood.	Per Cent	Quantity	Value.	Average Value	Supply by Regions.			
					British Columbia.	United States.	East.	Prairie.
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M
Total	100·0	11,058	220,502	19 95	475	602	5,708	4,273
Poplar	38·2	4,230	111,410	26 34	...	108	1,931	2,191
Spruce	33·0	3,646	60,272	16 53	340	90	1,134	2,082
Pine	23·8	2,634	39,454	14 78	112	404	2,118	...
Tamarack	4·7	520	8,750	16 83	...	...	520	...
Cottonwood	0·1	15	300	20 00	15	...	...	...
Hemlock	0·1	6	170	28 33	6	...	...	...
Maple	*	5	175	35 00	...	...	5	...
Douglas Fir	*	2	61	30 50	2	...	...	...

*Less than one tenth of one per cent.

The manufacture of boxes and box shooks and the use of wood for crating is the second most important wood-using industry in the Prairie Provinces, consuming 16·2 per cent of the wood used in an average year.

Native poplar is the most important wood used in point of quantity. Poplar is a light, tough, wood free from odour, white in colour and holds nails without splitting. It is specially valuable for boxes used to contain foodstuffs. Over half the poplar used was cut within the provinces themselves, with smaller importations from the United States and Ontario. Native spruce is second on the list. This wood is used for all kinds of boxes but is specially valuable for crating on account of its toughness.

Pine has always been a favourite material in this industry, but its increasing cost almost prohibits its use except as a means of utilizing low grade material. Some of the pine reported is probably jack pine. Tamarack is an excellent material for heavy boxes and crating and black cottonwood is probably superior to the native poplars, although it does not always pay to import it from British Columbia. Hemlock, maple and Douglas fir are used for skids for machinery.

Motor Boat Framework. Howard Rosling & Company, Winnipeg

TABLE 4.—COFFINS, CASKETS AND SHELLS.

Kind of Wood.	Per Cent.	Quantity.	Value.	Average Value.	Supply by Regions.			
					British Columbia.	United States.	East.	Prairie.
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M
Total	100·0	964	30,850	21 64	226	85	605	250
Poplar	41·5	400	6,800	17 00	.....	.....	200	200
Pine	31·4	303	6,820	22 50	150	.....	153	.....
Spruce	10·4	100	1,750	17 50	.....	.....	50	50
Basswood	6·2	60	1,950	32 50	.....	60	.....	.....
Cedar	6·0	58	1,350	23 25	58	.....	.....	.....
Oak	2·6	25	1,750	70 00	.....	25	.....	.....
Douglas Fir	1·9	18	430	24 39	18	.....	.....	.....

The manufacture of cloth-covered coffins and caskets, together with the rough boxes or shells used to contain them, consumes the greatest quantity of the lumber used in this industry.

Poplar is used for ... because it is cheap and easily worked and its lack of durability is of little or no importance. Oak is used for the more ornamental caskets. Coffins and caskets are often manufactured to order in local woodworking shops and the figures above represent only the wood used in factories making a specialty of this kind of work.

TABLE 5. FIXTURES.

Kind of Wood.	Per cent.	Quantity.	Value.	Average Value.	Supply by Regions			
					British Columbia.	United States.	East.	Foreign.
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M
	100·0	1,800	120,987	64 73	763	908	94	104
Pine	31·0	579	22,106	38 18	455	79	45	.....
Oak	21·6	403	32,728	81 21	.....	403	.....	.....
Basswood	14·0	261	13,083	50 13	.....	238	23	.....
Douglas Fir	9·4	175	6,743	38 53	175	.....	.....	.....
Birch	7·3	136	14,452	106 26	.....	134	2	.....
Spruce	5·1	95	3,500	36 84	95	.....	.....	.....
Mahogany	4·9	92	19,159	208 25	.....	.....	.....	92
Cottonwood	1·3	25	750	30 00	25	.....	.....	.....
Tulip	1·1	20	1,400	70 00	.....	20	.....	.....
Gum	1·1	20	1,200	60 00	.....	20	.....	.....
Maple	0·7	14	700	50 00	.....	.....	14	.....
Cedar	0·7	13	900	69 23	13	.....	.....	8
Spanish Cedar	0·4	8	1,520	190 00	.....	.....	.....	.....
Walnut (Blk)	0·4	8	1,280	160 00	.....	8	.....	.....
Poplar	0·4	8	156	19 50	.....	.....	8	.....
Chestnut	0·3	5	375	75 00	.....	5	.....	.....
Circassian Wl	0·2	4	800	200 00	.....	.....	.....	4
Tamarack	0·1	2	50	25 00	.....	.....	2	.....
Cypress	*	1	85	85 00	.....	1	.....	.....

* Less than one-tenth of one per cent.

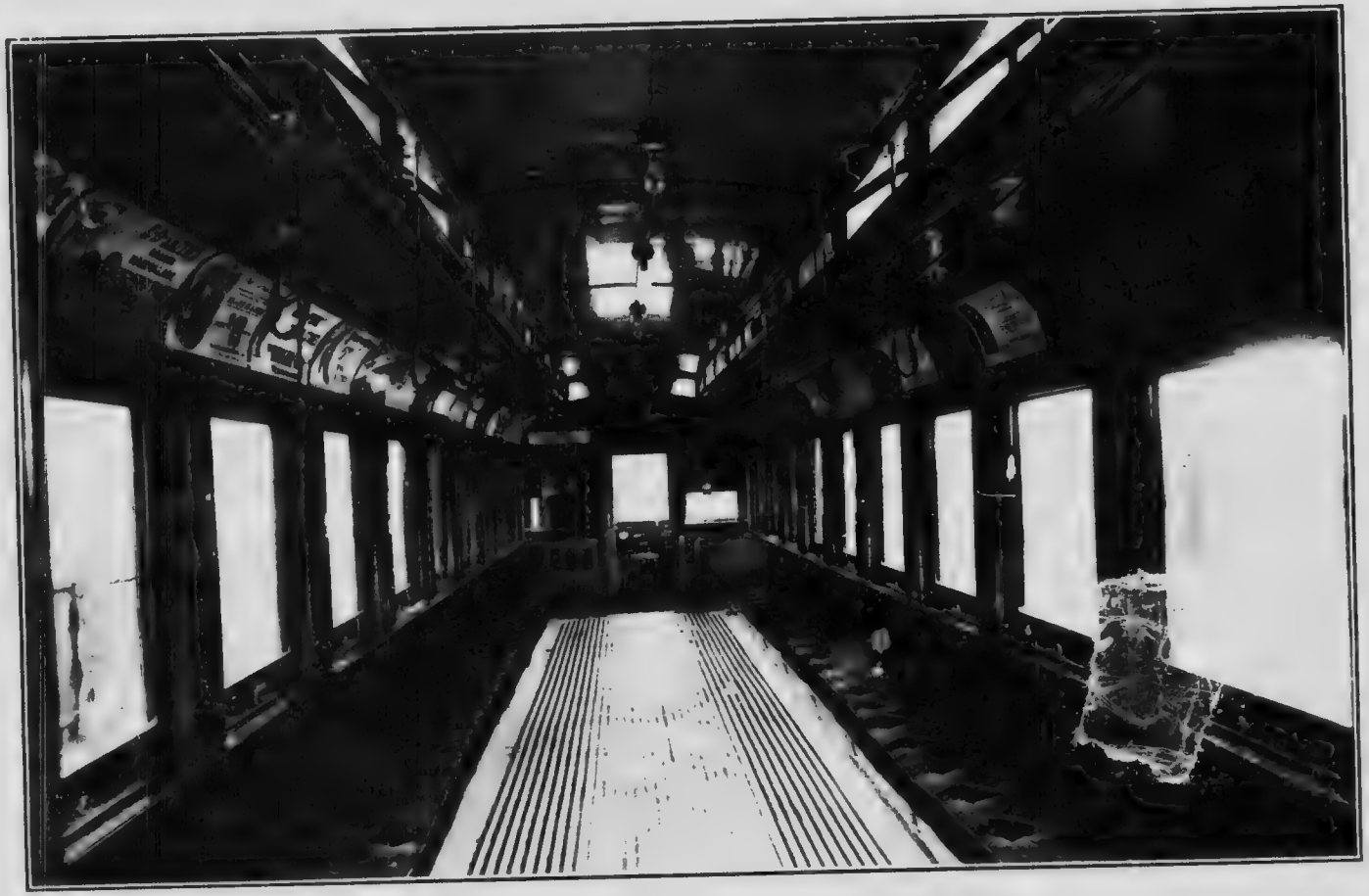
The manufacture of store and office fixtures is often carried on in sash and door factories, and the two industries are difficult to separate. The ways in which the woods are used can be classified into three groups. Pine, basswood, spruce, cottonwood, gum, cedar, poplar and tamarack, are used for shelving, counters, partitions, grills and office fixtures of the cheaper kinds. Basswood, tulip, gum, cedar and chestnut are used for "inside work" such as framework, core stock and other parts which are not exposed. Oak, birch, mahogany, gum, maple, Spanish cedar, black walnut and chestnut are used for "outside work" usually under stain and varnish or some natural finish. Douglas fir is frequently used in the form of sliced veneer for outside finish. Cypress is used for finish and for bar fixtures where it comes into contact with moisture.

TABLE 8.—FURNITURE.

Kind of Wood.	Per cent.	Quantity.	Value.	Average Value.	Supply by Regions.				
					British Columbia.	United States.	East.	Prairie.	Foreign.
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M
	100·0	2,148	105,764	49 24	152	1,479	226	267	24
Oak	29·5	633	52,857	83 50		628	5		
Birch	12·7	273	8,887	32 55		199	74		
Pine	12·2	262	7,501	28 63	145	115	2		
Spruce	12·0	258	9,514	36 88	4			254	
Elm	10·6	227	7,963	35 09		150	77		
Basswood	9·5	205	6,750	32 93		205			
Douglas Fir	7·4	160	3,093	19 33		160			
Maple	3·2	68	2,825	41 54			68		
Mahogany	1·1	23	4,068	176 87					23
Poplar	0·6	13	455	35 00				13	
Gum	0·5	10	500	50 00		10			
Tulip	0·3	7	593	84 71		7			
Cedar	0·1	3	180	60 00	3				
Hard Pine	0·1	2	52	26 00		2			
Cedar Span.	*	1	192	192 00					1
Cypress	*	1	75	75 00		1			
Cottonwood	*	1	50	50 00		1			
Walnut	*	1	200	200 00		1			

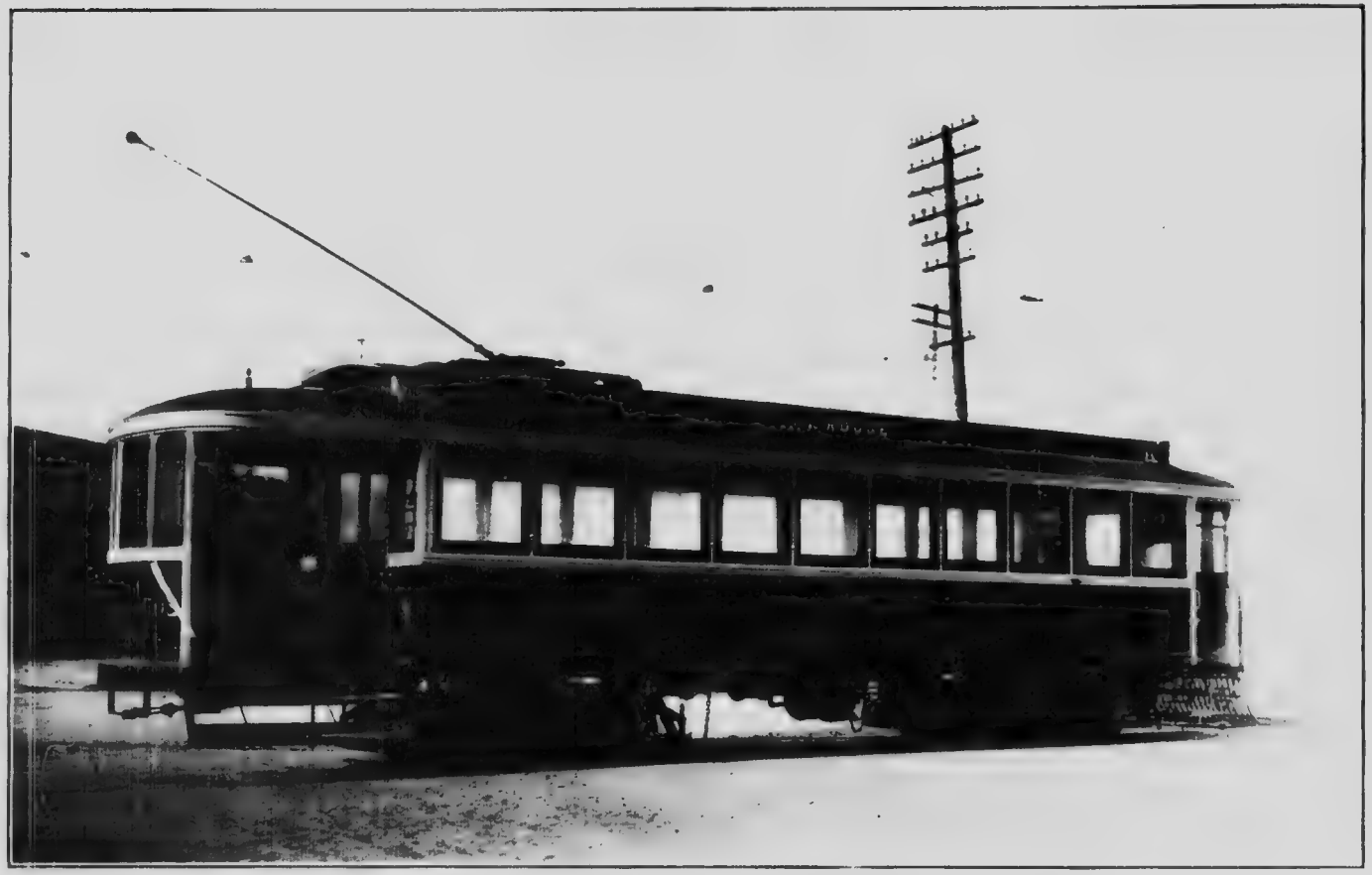
* Less than one-tenth of one per cent.

The manufacture of furniture in these provinces is usually carried on in connection with some other industry such as the manufacture of sash and doors, and the details are often difficult to separate. The greater part of the better class of furniture is imported from Eastern Canada and the United States owing to the absence of wood suitable for this purpose in the Prairie Provinces. The industry is similar to the manufacture of fixtures and the woods are used in the same way. More hardwoods are used which are almost all imported from the United States. Elm is used for kitchen furniture and frames. Hard pine is used for framework only. Spanish cedar is used in the form of veneer for outside work on the more expensive kinds of furniture.



Interior of Finished Street Railway Car. Winnipeg Electric Railway Company.

Interior of Finished Street Railway Car. Winnipeg Electric Railway Company.



Finished Street Railway Car. Winnipeg Electric Railway Company.

TABLE 7—PATTERNS AND FOUNDRY BOXES.

Kind of Wood	Per cent.	Quantity.	Value.	Average value.	Supply by Regions.				
					British Columbia	United States.	East.	Prairie.	Foreign.
		M Ft. B.M.	$	$ c.	M Ft. B.M.	M Ft. B.M.	M Ft. B.M.	M Ft. B.M.	M Ft. B.M.
Total	100·0	395	26,442	66 94	101	162	109	21	2
Pine	83·8	331	24,004	72 52	67	159	105		
Douglas Fir	8·1	32	832	26 00	32				
Spruce	5·3	21	336	16 00				21	
Cherry	1·0	4	514	128 50		3	1		
Mahogany	0·5	2	396	198 00					2
Cedar	0·5	2	140	70 00	2				
Maple	0·5	2	120	60 00			2		
Beech	0·3	1	100	100 00			1		

The wood used in foundries and pattern shops does not form a large proportion of the total quantity of wood used in the Prairie Provinces, but its use in this connection demonstrates the fact that while metals are being substituted for wood in many of its uses, wood itself must be used in the manufacture of metal products. White pine has always been highly prized as a pattern wood. It is soft, easily worked and keeps its shape and surpasses most other woods in these three qualities. The best white pine is obtained from Ontario and the Lake States. Rough pine is used for foundry boxes or flasks with spruce and Douglas fir. Cherry mahogany, maple and beech are used for special patterns which are to be used repeatedly and must be capable of standing considerable wear and tear. Cedar is sometimes used as a substitute for white pine.

TABLE 8—PUMPS, TANKS, CISTERNS AND SILOS.

Kind of Wood.	Per cent.	Quantity	Value.	Average value.	Supply by Regions.		
					British Columbia	United States.	Prairie.
		M Ft. B.M	$	$ c.	M Ft. B.M	M Ft. B.M	M Ft. B.M
Total	100·0	411	14,953	36 38	224	177	10
Pine	67·9	279	10,110	36 24	103	176	
Douglas Fir	27·0	111	4,203	37 86	111		
Spruce	4·6	19	580	30 53	10		9
Maple	0·2	1	40	40 00		1	
Tamarack	0·2	1	20	20 00			1

Western yellow pine (*Pinus ponderosa*) is the favourite material used in the manufacture of pump heads and logs or tubing. The wood is purchased in the form of dimension stock from four to six inches square which must be quarter-cut or free from the heart or pith of the tree to prevent checking. Tamarack is also highly prized for this purpose on account of its durability. Maple is used for pump handles, and pine, Douglas fir, and spruce are used for water tanks, troughs, cisterns and silos.

Interior of Unfinished Street Railway Car. Winnipeg Electric Railway Company.

TABLE 9.—SASH DOORS AND MILLWORK.

Kind of Wood	Per cent.	Quantity.	Value.	Average Value.	Supply by Regions.				
					British Columbia	United States.	East.	Prairie.	Foreign
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M
Total....	100·0	43,321	1,545,017	35·66	29,335	6,340	2,245	5,298	103
Douglas Fir..	29·7	12,868	467,485	36·33	11,659	1,209	....	....	....
Cedar.....	23·8	10,327	333,497	32·28	10,527	.....	.....	5,273	.....
Spruce..	18·1	7,853	110,950	14·13	2,193	387	.....	.....	.....
Pine..	17·5	7,569	244,995	32·37	4,469	937	2,163	.....	.....
Oak.....	7·0	3,028	295,466	97·58	....	3,009	19	..	....
Birch	1·7	747	54,005	72·30	103	635	9	....	....
Tamarack ...	1·0	444	11,546	26·00	434	.....	.....	10 ..	....
Hemlock.	0·4	169	4,790	28·34	150	19	....	....	.....
Mahogany...	0·2	103	9,092	88·27	....	....	....	....	103
Maple..	0·2	65	3,963	60·97	....	11	54	....	....
Basswood.... ..	0·1	48	2,208	46·00	....	48	....	....	....
Cherry	0·1	36	3,411	94·75	....	36	....	....	....
Tulip.	0·1	25	1,650	66·00	....	25	....	....	.....
Poplar..	*	15	255	17·00	....	....	....	15	...
Ash	*	14	761	54·36	.....	14	....	....	....
Walnut.....	*	6	727	121·17	....	6	....	....	....
Cypress.....	*	2	156	78·00	.... .	2	....	....	....
Sycamore.. ...	*	1	77	77·00	....	1	....	....	....
Gum.	*	1	73	73·00	....	1	....	.....	....

*Less than one tenth of one per cent.

This industry is always the most important in point of quantity of wood used. In the Prairie Provinces the builders' factories which manufacture sash, door and builders' woodwork usually make fixtures, furniture, boats, vehicles, boxes and other commodities as well. Material that is merely dressed in the factory to be cut and fitted during the construction of the building is not included in the above figures where it has been possible to effect a separation.

The total therefore only represents a part of the wood used in building construction. The woods used in building construction in general can be divided into several classes. Under structural framework can be included sills, rafters and studding. The woods used for this purpose are all softwoods or the woods of coniferous trees. Hardwoods may be strong enough for this purpose, but they do not possess the stiffness necessary. Douglas fir, spruce, pine, tamarack and hemlock are the only woods used in this way. Under the heading of finish and doors would be included, flooring, wainscoting, sheeting, siding, ceiling and stair work. In the more expensive kinds of interior finish hardwoods are used including such woods as oak, birch, mahogany, maple, cherry, ash, walnut, sycamore and gum. These are usually finished to show the natural grain of the wood. Oak, birch and maple are used for hardwood flooring. The other woods such as Douglas fir, cedar, spruce, pine, etc., are used for similar purposes in buildings of cheaper construction where they are usually painted or enamelled, but often finished so as to show the natural grain of the wood. The softwoods only are used for siding and sheeting or exterior finish. Window sash are mostly made of pine, although spruce is also used extensively.

Doors are made of either hardwoods or softwoods under paint or varnish. Basswood, tulip and poplar are preferred for panelling. Cedar, cypress and tamarack are often selected for veranda work because of their durability. Practically all the hardwoods are imported from the United States. The greater part of the spruce used is native grown material from the Prairie Provinces.

TABLE 10. SIGNS.

Kind of Wood.	Per cent.	Quantity.	Value.	Average Value.	Supply by Regions	
					British Columbia.	Prairie.
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M
Total	100 0	67	1,998	29 82	17	50
Spruce	74 6	50	1,458	29 16		50
Pine	20 9	14	420	30 00	14	
Cedar	4 5	3	120	40 00	3	

Woods used for framework of signs and for bill boards are not usually selected because of any particular qualities they possess apart from strength and cheapness.

Pine and spruce are used for the frames of signs which are to be covered with sheet metal. Because of its durability when exposed to the weather cedar is selected for street signs made entirely of wood. All three woods are used for bill boards.

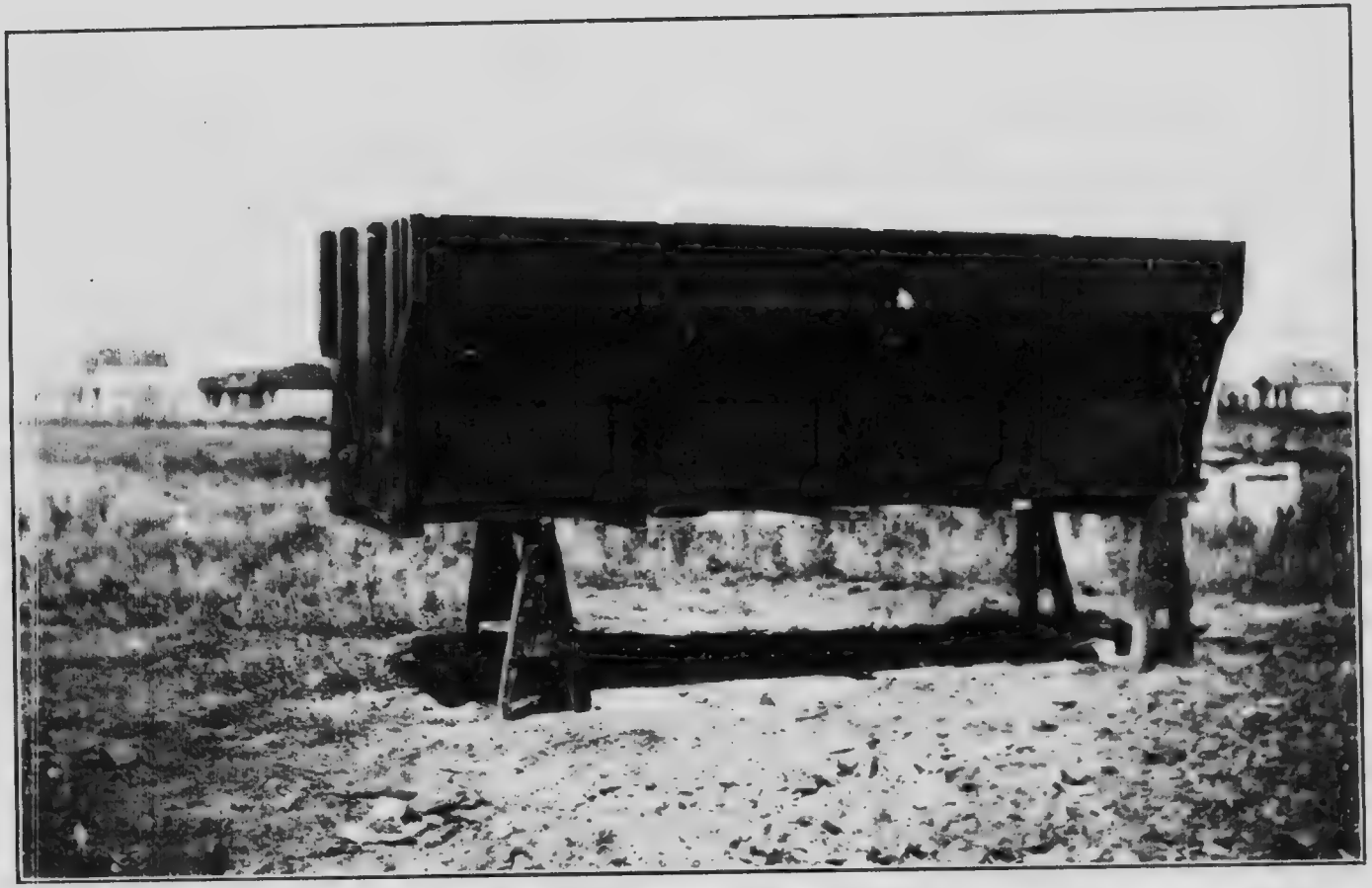
TABLE 11.—VEHICLES AND CARS.

Kind of Wood	Per cent.	Quantity.	Value.	Average value.	Supply by Regions.				
					B. C.	U. S. A.	East.	Prairie.	Foreign
		M ft. B.M.	$	$ c.	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft.	M M Ft. B.M
Total	100 0	3,719	180,293	48 48	1,308	1,979	414	13	5
Douglas Fir	38 8	1,443	39,275	27 22	1,293	150			
Oak	30 5	1,134	71,625	63 16		1,083			
Pine	6 2	229	7,217	31 65	14	2	215		
Basswood	4 7	176	9,232	52 45		155	21		
Elm	3 7	138	6,487	47 01		133	5		
Hickory	3 6	133	13,886	104 41		125	8		
Ash	3 2	119	9,020	75 80		107	12		
Maple	2 9	108	8,309	76 94		8	100		
Birch	2 3	84	4,420	52 62		83	1		
Tulip	1 0	39	2,920	74 87		39			
Gum	1 0	39	2,340	60 00		39			
Cottonwood	0 8	28	1,261	45 04		28			
Cherry	0 7	26	2,497	96 04		26			
Spruce	0 3	12	293	24 42				12	
Mahogany	0 1	5	996	199 20					5
Tamarack	0 1	2	94	47 00			1	1	
Walnut	*	1	202	202 00			1		
Beech	*	1	78	78 00			1		
Chestnut	*	1	76	76 00		1			
Cedar	*	1	35	35 00	1				

*Less than one tenth of one per cent.

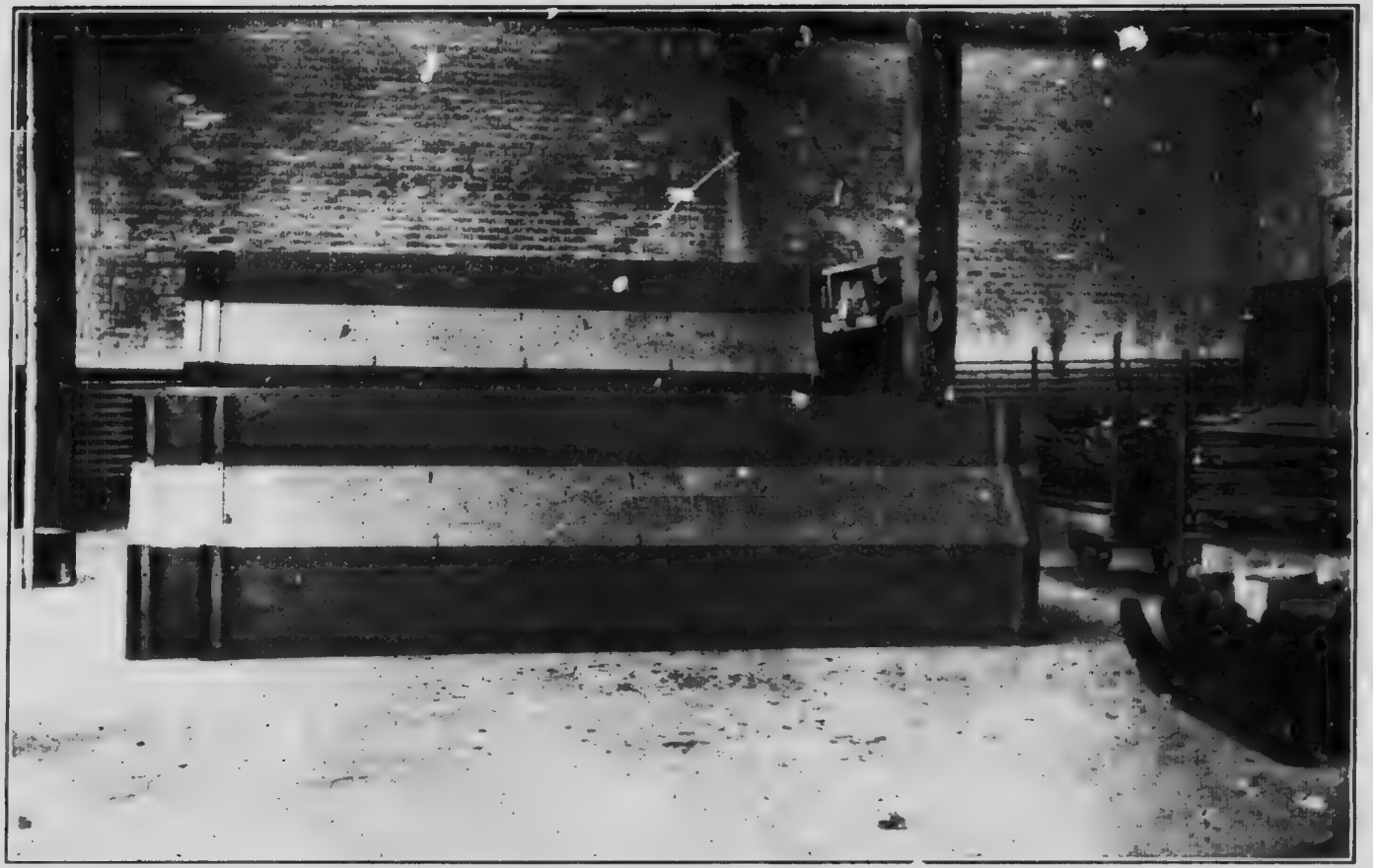
All kinds of horse vehicles are included in this class together with automobiles and steam and electric railway rolling stock.

Douglas fir, maple and oak are used for the heavy bottom framework of cars, and elm, ash, and birch for the framework of the superstructure. Passenger coaches and electric cars are sheeted with cherry, birch and basswood. Interior finishing is done with these woods and with mahogany, tulip, ash and oak, and maple for flooring. For freight cars Douglas fir and pine are used for roofing, siding and lining.



Grain Tank. Gregg Manufacturing Company, Winnipeg.

Grain Tank. Gregg Manufacturing Company, Winnipeg.



Knocked-down Vehicle Stock. Gregg Manufacturing Company, Winnipeg.

For horse vehicles the gear stock is usually oak, hickory, elm, maple, ash, birch, beech and ironwood. Bodies and boxwork are made of pine, basswood, gum, tulip, cottonwood spruce, tamarack, cedar and chestnut. Walnut is used for trimming. Basswood and tulip are used in automobile tonneaus or bodies which are trimmed with walnut and ash.

Except for car material most of the vehicle woods are used in small repair shops as there are few large factories manufacturing complete vehicles. The stock is usually purchased already manufactured or at least ready to be assembled. This stock is usually imported from Eastern Canada, but the rough hardwood lumber used in the Prairie Provinces is almost all imported from the United States.

TABLE 12. MISCELLANEOUS.

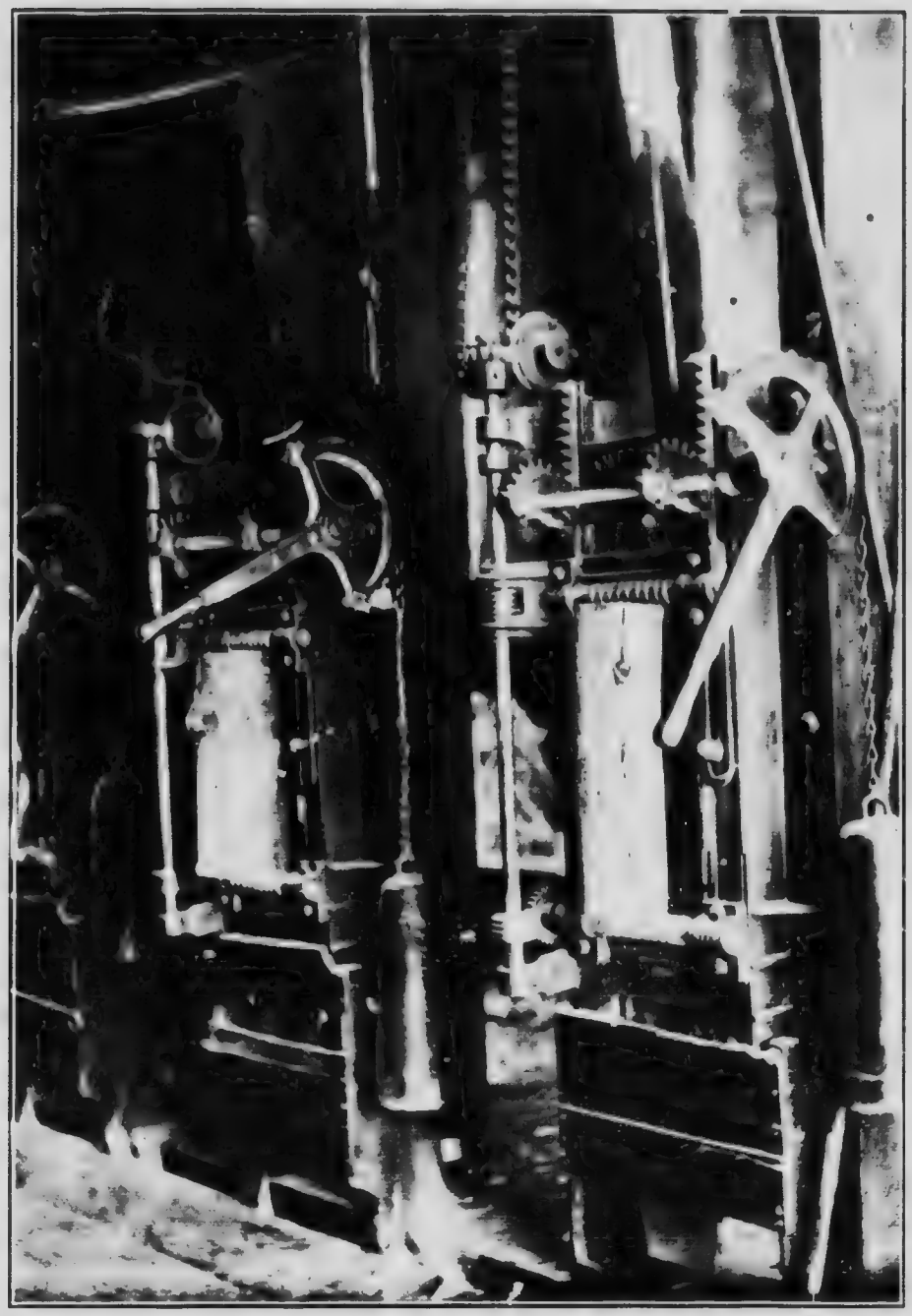
Kind of Wood.	Per Cent.	Quantity.	Value.	Average Value.	Supply by Regions.				
					British Columbia.	United States.	East.	Prairie.	Foreign.
		M Ft. B.M	$	$ cts.	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M	M Ft. B.M
Total	100·0	3,915	89,286	22 80	99	75	3,023	717	1
Pine	19·1	1,689	42,775	25 33	20		1,669		
Poplar	31·1	1,219	17,665	14 49			508	711	
Tamarack	20·4	800	20,800	26 00			800		
Cottonwood	1·7	66	930	14 09	66				
Birch	1·4	55	3,003	56 24		10	45		
Oak	1·1	45	1,180	26 22		45			
Cherry	0·3	11	1,393	126 64		10	1		
Douglas Fir	0·3	10	250	25 00	10			6	
Spruce	0·2	6	159	26 50		4			
Basswood	0·1	4	180	45 00					
Cedar	0·1	3	180	60 00	3				
Ash	0·1	2	190	95 00		2			
Walnut	*	1	120	120 00		1			1
Mahogany	*	1	110	110 00					
Maple	*	1	96	96 00		1			
Hickory	*	1	88	88 00		1			
Beech	*	1	77	77 00		1			

* Less than one tenth of one per cent.

Under this heading are included the statistics of the wood used in the manufacture of all such products that could not be described as separate industries.

Pine was used for creosoted paving blocks, tent poles, poultry men's supplies and frames for mounting big game trophies. Poplar and cottonwood were used chiefly in the manufacture of excelsior. The wood is purchased in four-foot bolts, and after being seasoned is cut into suitable lengths and made into excelsior on special machines designed for this purpose. Poplar is made into pulp for use with gypsum in making a fibre plaster for building purposes.

Tamarack was also used for paving blocks. Birch was used in making washing machines, tool handles, brush blocks and blocks for cuts and engravings. Oak was used in smoking meats and in making shields for trophies. Some oak is also used in manufacturing and repairing tight cooperage, although practically all the barrels used are imported. Cherry, beech, mahogany and maple were used with birch for backing or blocking cuts and engravings. Douglas fir was used with spruce for awning frames and frames for mounting trophies. The other woods were used as follows: Basswood for ironing boards, cedar for dies, ash for advertising novelties, hickory for handles, walnut for gunstocks, greenheart for fishing rods and Turkish boxwood for wood engravings.



Excelsior Machines, cutting Aspen Poplar — Winnipeg Excelsior Mill.

PROPORTION OF KINDS OF WOOD USED BY INDUSTRIES.

Table E has been compiled for the purpose of showing to what extent each of the twenty-eight kinds of wood is used by the different industries. The sign † following a figure in the table indicates that the industry purchased a greater percentage

TABLE E PERCENTAGES OF DIFFERENT KINDS OF WOOD USED IN THE PRAIRIE PROVINCES BY VARIOUS INDUSTRIES.

Kind of Wood.	Agricultural Implements.	Posts.	Boxes.	Coffins.	Fixtures.	Furniture
Ash	0·7	0·7	..	..	..	..
Basswood	13·7	..	..	6·9	†20·9	23·5
Beech	..	..	..	..	..	..
Birch	3·8	*	..	..	10·1	20·3
Cedar	..	0·1	..	0·6	0·1	*
Cherry	..	..	..	..	..	..
Chestnut	..	..	..	..	†83·3	..
Circassian Walnut	..	..	..	..	†100·0	..
Cottonwood	..	..	11·1	..	18·5	0·7
Cypress	..	†81·8	..	..	4·5	4·5
Douglas Fir	0·3	*	*	0·1	1·2	1·1
Elm	0·3	0·5	..	..	..	†61·7
Gum	..	..	..	..	28·6	14·3
Hard Pine	..	†80·0	..	..	..	20·0
Hemlock	..	..	3·4	..	..	..
Hickory	0·7	..	..	..	..	..
Mahogany	..	0·9	..	..	40·3	10·1
Maple	†29·4	..	1·3	..	3·7	18·2
Oak	0·9	0·1	..	0·5	7·6	11·9
Pine	0·2	*	18·9	2·2	4·2	1·9
Poplar	..	..	†71·9	6·8	0·1	0·2
Spanish Cedar	..	..	..	..	†88·9	1·1
Spruce	0·8	*	30·0	0·8	0·8	2·1
Sycamore	..	..	..	..	..	..
Tamarack	..	*	29·4	..	0·1	..
Teak	..	†100·0	..	..	..	..
Tulip	..	..	..	..	22·0	7·7
Walnut	..	5·6	..	..	†44·4	5·6

of the total quantity of that particular kind of wood than any of the other industries using it. The sign * in a blank space indicates the fact that the industry used less than one-tenth of one per cent of the wood.

Other blank spaces indicate that the industry did not use the wood at all.

TABLE E.—PERCENTAGES OF DIFFERENT KINDS OF WOOD USED IN THE PRAIRIE PROVINCES BY VARIOUS INDUSTRIES.

Kind of Wood.	Patterns and Foundry Boxes.	Pumps and Tanks.	Sash, Doors and Millwork.	Signs.	Vehicles and Cars.	Miscellaneous
Ash			10·2		986·9	1·5
Basswood			5·5		20·1	0·4
Beech	433·3				33·3	33·3
Birch			†55·5		6·2	4·1
Cedar	*		†89·1	*	*	*
Cherry	5·2		†46·7		33·8	14·3
Chestnut					6·7	
Circassian Walnut						
Cottonwood					20·7	†48·9
Cypress			0·1			
Douglas Fir	0·2	0·7	†86·5		9·7	0·1
Elm					37·5	
Gum			1·4		655·7	
Hard Pine						
Hemlock			†96·6			
Hickory					†98·5	0·7
Mahogany	0·9		†45·2		2·2	0·4
Maple	0·5	0·3	17·4		28·9	0·3
Oak			†56·9		21·3	0·8
Pine	2·4	2·0	†54·4	0·1	1·6	12·1
Poplar			0·3			20·7
Spanish Cedar						
Spruce	0·2	0·2	†64·6	0·4	0·1	*
Sycamore			†100·0			
Tamarack		*	25·1		0·1	†45·2
Teak						
Tulip			27·5	*	†42·8	
Walnut			33·3		5·6	5·5

SUMMARY OF AVERAGE PRICES.

Table F shows, in summary form, the average prices paid by each of the twelve classes of industries, for each of the twenty-eight kinds of wood. The sign † following a price indicates that it was the highest price paid for this material by any of the

TABLE F. SUMMARY OF AVERAGE PRICES PAID BY VARIOUS INDUSTRIES FOR DIFFERENT KINDS OF WOOD IN THE PRAIRIE PROVINCES.

Kind of Wood.	Agricultural Implements.	Boats.	Boxes.	Coffins.	Fixtures.	Furniture.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Ash	*35 00	76 00		32 50	50 13	32 93
Basswood	*28 83					
Beech					†106 26	32 55
Birch	*25 00	60 00		*23 28	60 23	60 00
Cedar		57 12				
Cherry					*75 00	
Chestnut					200 00	
Circassian Walnut			20 00		30 00	†59 00
Cottonwood		*63 00			185 00	75 00
Cypress						
Douglas Fir	36 33	†63 00	30 50	24 39	38 53	*19 33
Elm	*35 00	38 50			60 00	35 08
Gum						*50 00
Hard Pine		†70 00				*26 00
Hemlock			*28 33			
Hickory	100 00				208 25	176 87
Mahogany		†350 00			50 00	41 54
Maple	39 61		*35 00		81 21	83 50
Oak	79 91	†131 00		70 00	38 18	28 03
Pine	36 00	61 00	*14 98	22 50	19 50	15 00
Poplar			26 34	17 00	*190 00	†192 00
Spanish Cedar	18 00	29 60	16 53	17 50	36 84	†36 88
Spruce						
Sycamore		28 00	*16 83		25 00	
Tamarack						
Teak		375 00			70 00	184 71
Pulp					160 00	208 00
Walnut		200 00				

* H... the highest price paid
† ... the highest price paid

industries. The sign * indicates the lowest price paid. Blank spaces occur where wood was not used by an industry at all.

TABLE F SUMMARY OF AVERAGE PRICES PAID BY VARIOUS INDUSTRIES FOR DIFFERENT KINDS OF WOOD IN THE PRAIRIE PROVINCES

Kind of Wood.	Patterns and Foundry Boxes.	Pumps and Tanks.	Sash Doors and Millwork.	Signs.	Vehicles and Cars.	Miscellaneous.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Ash			54 36		75 80	195 00
Basswood			46 00		†82 45	45 00
Beech	†100 00				78 00	*77 00
Birch			72 30		52 62	56 24
Cedar	†70 00		32 28	40 00	35 00	60 00
Cherry	†128 50		*94 75		96 04	126 64
Chestnut					†76 00	
Circassian Walnut						
Cottonwood					45 04	*14 09
Cypress			78 00			
Douglas Fir	26 00	37 86	36 33		27 22	*25 00
Elm					†47 01	
Gum			†73 00		60 00	
Hard Pine						
Hemlock			†28 34			
Hickory					†104 41	*88 00
Mahogany	198 00		*88 27		199 20	110 00
Maple	60 00	40 00	60 97		76 94	†96 00
Oak			97 58		63 16	*26 22
Pine	†72 52	36 24	32 37	30 00	31 65	25 33
Poplar			17 00			*14 49
Spanish Cedar						
Spruce	16 00	30 73	*14 13	29 16	24 42	26 50
Sycamore			77 00			
Tamarack		20 00	26 00		†47 00	26 00
Teak						
Tulip			*66 00		74 87	
Walnut			121 17		†202 00	*120 00

† Highest price paid.
* Lowest price paid.

THE EXHIBIT OF MANITOBA WOODS AT THE CONVENTION OF THE CANADIAN FORESTRY ASSOCIATION AT WINNIPEG, MAN., JULY 7 TO 9, 1933.

The Exhibit was arranged in the large rotunda of the Winnipeg Industrial Bureau. The illustrations below show the two halves of the circle.

Black Willow (*Salix nigra*). Dia. 20 in

American (White) Elm (*Ulmus americana*). Dia. 20 in.

Balsam Fir (*Abies balsamea*) Dia. 24 in.

Black Spruce. (*Picea mariana*). Dia. 12 in.

Aspen (White Poplar) (*Populus tremuloides*). Dia 27 in.

Balsam (Black) Poplar or Balm of Gilead. (*Populus balsamifera*). Dia. 30 in.

Cottonwood. (*Populus deltoides*). Dia. 42 in.

White Cedar (*Thuja occidentalis*). Dia. 15 in.

Basswood (*Tilia americana*) Dia. 22 in

Black Ash (*Fraxinus nigra*) Dia. 18 in.

Bur Oak (*Quercus macrocarpa.*) Dia. 33 in.

White Spruce (*Picea canadensis.*) Dia. 40 in.

Tamarack (*Larix laricina.*) Dia. 19 in.

White Birch (*Betula alba, var. papyrifera.*) Dia 19 in.

Jack Pine (*Pinus Banksiana.*) Dia. 22 in.

Red (Norway) Pine (*Pinus resinosa.*) Dia. 23 in.

Manitoba Maple (*Acer Negundo.*) Dia. 18 in.

APPENDIX.

POSSIBLE USES FOR NATIVE WOODS.

The Prairie Provinces form primarily an agricultural and pastoral region. The greater part of the energy of the population is devoted to the production of food products, their preparation for the market and their marketing.

The forest resources, under existing conditions, are not sufficient in quantity or suitable in quality to supply all needs of the rapidly increasing population. Certain classes of wood, notably hardwoods, do not exist in commercial quantities and must be imported. The existing forests are often not convenient to the better farming districts, cheap water transportation is wanting and lumber of similar kind to the native supply is imported economically, where transportation facilities are favourable.

As in the case of every newly settled region commodities are imported in the finished form and only of late years have industries been established for the manufacture of such products as vehicles, agricultural implements and furniture. These, as a rule, consume imported woods as the native species are not suitable. The native woods at present are used in greatest quantity in building construction as the nature of the country demands. An investigation of the other industries using native woods shows that they are not being utilized to their fullest extent. Some species are totally misunderstood and neglected, others are wasted in inferior uses.

It is more than possible that new industries could be established in this region to use native woods if conditions, other than an ample supply of raw material, were favourable. The consideration of such questions as water supply, power available, labour conditions, shipping facilities and market development are all of vital importance, but cannot be taken up in this bulletin. Descriptions of the different native trees, the supply available, the important characteristics of their wood and the uses to which they have been put in other parts of this continent are given here as suggestions which can be investigated, and followed by consideration of the other factors which influence the economic possibilities of establishing any of the industries mentioned.

SPRUCE.

Spruce is the most important tree in the Prairie Provinces as it is in Canada as a whole. Almost 95 per cent of the lumber produced in 1913 in these provinces was spruce. A rough estimate of the quantity of spruce available at the present time in these province would be 21,000,000,000 feet board measure of merchantable timber. Much of this is in scattered stands and most of it is inaccessible at the present time. The production of lumber alone in 1913 was 41,704,000 ft. b.m. and in addition to this the wood is used in the rough for mining timbers, poles, cross-ties, fencing and fuel.

Elsewhere in Canada spruce is used in enormous quantities for pulp manufacture. In 1913 Canadian mills consumed 754,858 cords of this wood and at least an equal quantity was exported in the unmanufactured form. So far this wood has not been used for pulp in the Prairie Provinces. It is white in colour and free from resin and its fibres are exceptionally long and tough, producing a pulp that is easily bleached and makes excellent paper for all purposes. The pulp is prepared by the mechanical process and by three chemical methods in Canada, producing ground wood pulp, sulphite fibre, sulphate or kraft fibre and soda fibre. The logs float well and are easily driven. The wood is free from defects and is easily rossed or barked, and is considered to be the best pulpwood in America.

Spruce is used in Canada in manufacturing at least thirty per cent of the cooperage stock produced in an average year. In the Maritime Provinces spruce forms

almost four-fifths of the wood used for this purpose. The greatest quantities go into the manufacture of staves, but the wood is also used for heading and hoops in greater quantities than any other wood used in that region. A large proportion of this stock is used in making slack barrels to contain sugar, apples, flour and lime, but tight cooperage is also made of spruce for packing fish, vinegar, cider and other food products. Spruce is preferred for food containers on account of its lack of taste and odour. The wood has the requisite strength and toughness for most cooperage stock.

Spruce makes a strong, tough veneer that does not split in drying and can be used for many small products such as baskets, fruit and vegetable crates and wooden plates. The veneer takes glue well and built-up veneered products of spruce give a maximum of toughness and strength for their weight. The layers of veneer are glued together with the grain of each layer at right angles to the next. This many-ply stock is used for chair seats and backs, drawer bottoms, trunk boxes and trays.

Excelsior is manufactured in the Prairie Provinces, but only poplar and cottonwood are used at present, although spruce has been used elsewhere with excellent results. Softness, toughness and flexibility are the chief requirements of wood for excelsior manufacture and spruce fills these almost as well as poplar although being harder it may be a little more difficult to work.

White pine is the favourite match material in Canada as aspen is in Europe. Spruce has been used in the United States and has proved to be an excellent material for the purpose. While the match sticks do not ignite as readily as those of white pine they are tougher and usually have a straighter grain.

Spruce can be used in large dimensions with greater safety than most woods. Not only is the wood remarkably free from defects, but these defects when present, show on the surface of the lumber and there is little danger of a well selected piece failing through some hidden defect. This same quality together with an unusually straight grain makes spruce a favourite wood for the manufacture of oars and paddles. The long, light, carefully proportioned and balanced sculls used in racing boats are made exclusively of spruce. No other wood has the same lightness and strength together with uniform structure and straight even grain.

When spruce grows in close stands in the forest, it develops a long, slender, tapering bole, free from large branches for the greater part of its length. This habit of growth, together with the lightness and toughness of the wood, produces an ideal material for the spars of vessels. In addition to the large quantities of spruce lumber used in building the hulls, many selected trees are felled and made into masts, yards, booms and bowsprits.

One of the most distinct characteristics of spruce wood, and one which is not possessed by any other wood to an equal extent is its resonance. For the manufacture of sounding-boards in pianos resonance is an essential quality and spruce is usually demanded for this purpose. Its quality of prolonging and increasing sound vibrations is a remarkable one and is due chiefly to its uniform structure. Trees growing under unfavourable conditions whose annual growth rings are narrow, produce the best quality of wood.

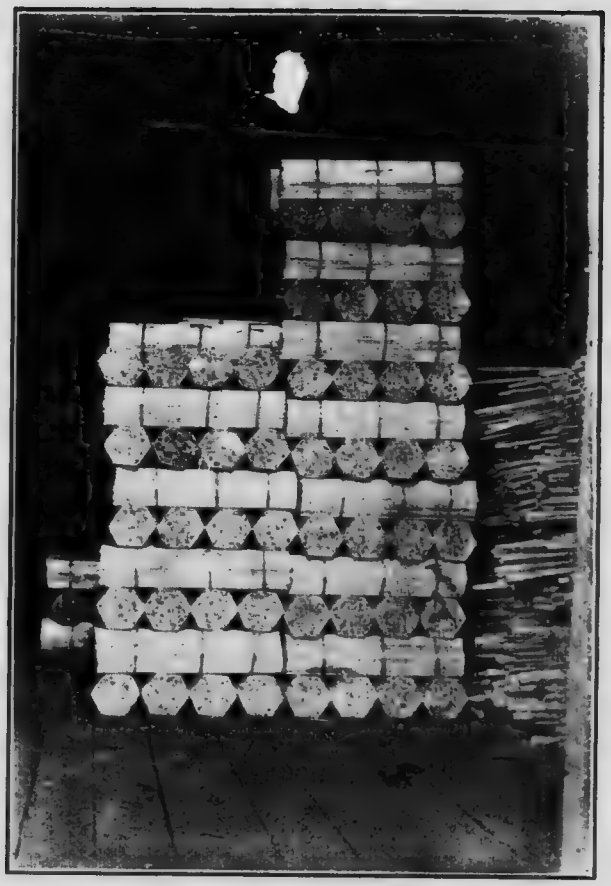
Organ pipes, bellows, swell-boxes, wind chests and ribs are also made preferably of spruce, as are the sounding boards of pianos and such small instruments as guitars, mandolins, zithers, etc.

In many intances spruce is preferred to other woods on account of its lack of taste and odour. Its uses in this connection in addition to boxes, cooperage and refrigerator cars, include doors and lining of refrigerators and cold storages, kitchen tables and cabinets, silos, wooden water pipes and woodenware which comes into contact with food such as butter-working tools, bread-boards, meat-boards, etc.

POPLAR.

It has been said that a weed is not necessarily a useless plant, but rather one for which no use has yet been found. There are many trees in Canada that have been considered as weed trees for many years, and would still be considered as such but for

PHOTO. R. G. LEWIS.
Spruce and Balsam Fir Heading Packed for Shipment. Acadia Sugar Refinery Co., Ltd., Stave and Heading Factory, Moncton, N.B.



(PHOTO R. G. LEWIS.)
Paper Birch Dowel Rods Bundled for Export. Sussex Manufacturing Co. Ltd., Sussex, N.B.

the increasing scarcity of wood and its rapid rise in price. When the supply of the more desirable, more easily utilized woods, begins to fail to meet the demand, manufacturers must turn to the "weed trees" and study new ways of adapting these to their purposes. Poplar and jackpine are common trees in the forests of the Prairie Provinces and except for rough construction and similar inferior uses they have usually been considered as "tree weeds".

The production of poplar lumber in these three provinces in 1913 amounted to 2,494,000 feet board measure of which 86 per cent was aspen (*Populus tremuloides*) and 14 per cent balm poplar (*Poplus balsamifera*). The trees are very common throughout the region, coming in rapidly after a burn, and extending further out into the prairie country than most other species. The light seeds are carried long distances by the wind and the rapid growth of the seedlings enables the tree to establish itself easily. It is not a long-lived tree and seldom exceeds the age of 100 years, when it is usually killed out by spruce which is of slower but more persistent growth.

There is probably at the present time about 8,000,000,000 feet board measure of poplar of saw timber size in the three provinces, but much of this is defective. The wood is heavy when green and many logs sink and are lost in driving. The slippery bark makes logging difficult and it probably costs 20 per cent more to bring this wood to the saw mill than spruce. The lumber is difficult to season without checking and warping but the wood does not shrink badly, and, once properly treated, is a valuable material for certain purposes.

The qualities and defects of the wood of the white or aspen poplar and the black or balm poplar are about equally balanced. Aspen makes an excellent firewood, burning while green without sparks and making a hot quick fire, while balm is almost useless for this purpose. Aspen is liable to damage by the hoof fungus, while balm is almost immune; aspen is not subject to frost cracks and wind shakes, while balm is often defective through these causes.

Aspen poplar is used in Manitoba in the manufacture of pulp used in making fibre plaster. Poplar pulp is used elsewhere, mixed with spruce or some long fibred pulp, in the manufacture of book and magazine paper. This wood makes a weak, light-coloured pulp easily bleached and when used for paper making is usually prepared by some chemical process. Such a process, when applied to spruce merely separates the fibres from one another and does not impair the strength of the individual fibre. When applied to poplar, however, it breaks down the fibre and produces merely a pulpy mass without any cohesive strength. This pulp is mixed with spruce or some other tough pulp in the proportions of 60 per cent poplar and 40 per cent spruce pulp. This makes a very superior, tough white paper, easily sized and much cheaper than rag paper. The poplar pulp in reality adds only body to the paper, as it lacks a long tough fibre like that of spruce, and could not be used without the tougher pulp to bind it together.

The manufacture of excelsior in the Prairie Provinces consumes about 3,000 cords of poplar annually. The wood is purchased in four foot lengths and after being well air dried is cut into convenient lengths and converted into excelsior on special machinery. Manufacturers do not seem to have any great difficulty in obtaining clear, sound poplar for this purpose, although smaller trees can be used than would ordinarily be sawn into lumber.

As a cooperage wood aspen ranks among the best, especially for barrels to contain foodstuffs, such as flour, sugar, fish, meats, etc. It is not so strong or tough as elm and birch, but is easily worked and imparts neither taste, stain nor odour to the contents of the barrel. This wood has also been reported as having been used for straight stave cooperage, such as candy and lard pails, spice kegs, sugar and jelly buckets, in Canada and in the Eastern United States.

Balm poplar is usually tougher than aspen, and is more valuable for making veneer, although both trees are used. The veneer is used in the manufacture of baskets, berry boxes, tobacco and cigar boxes, three-ply trunk boxes, veneer barrels, and for cross-banding in the manufacture of veneered furniture.

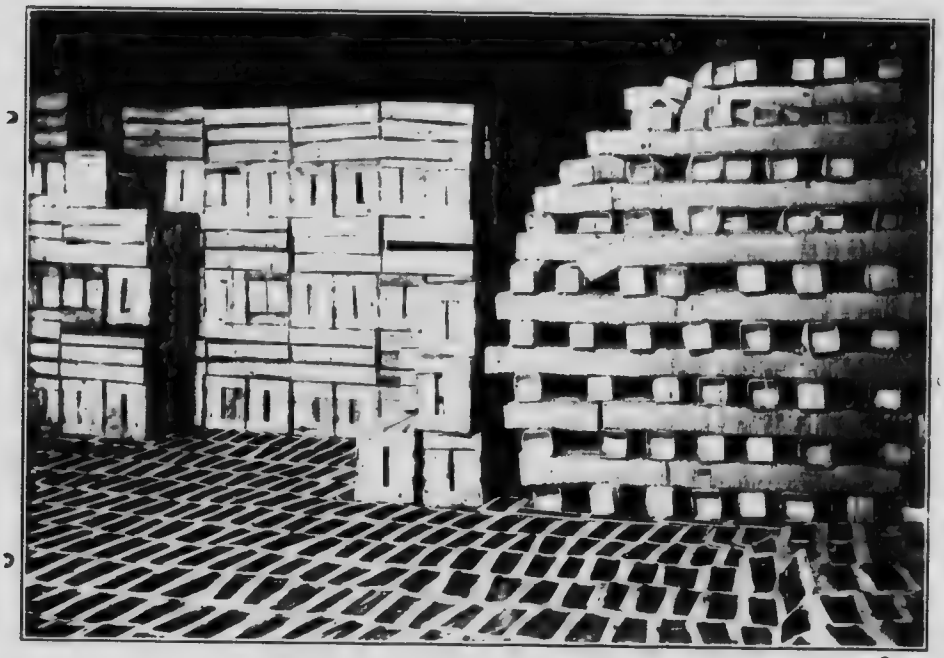


Photo. R. G. Lewis.

Berry Boxes, Crates and Basket Covers of Birch and Poplar Veneer. D. W. Murray, Hantsport, N.S.

Poplar Lumber, Showing Preva'ence of De'ects.

The European aspen poplar (*Populus tremula*) is used almost exclusively in Scandinavia, Russia, Germany and England in the manufacture of match sticks. Large quantities of Swedish safety matches are imported into the Prairie Provinces and the sticks of these are made of a wood which is practically identical with the much despised poplar of the prairie regions. On account of the lightness and toughness of this wood much smaller sticks can be made than would be possible with white pine.

The wood is considered to be the best substitute obtainable for tulip for wagon beds and body work. Furniture frames and exposed parts of kitchen furniture are made of this wood. Ironing-boards, clothes-racks, chair-dowels, washboards and kitchen woodenware are made from a light, soft wood that will not splinter or wear rough. Poplar is the cheapest and best material obtainable in these provinces for such purposes. Bake-boards, saddler's, harnessmaker's and shoemaker's boards, cigarmakers' boards and boards and table tops of all kinds on which cutting tools are used, are made of poplar because it is compact, holds its shape and does not dull the tools.

Aspen is demanded by certain manufacturers for certain purposes, some of which are peculiar. Manufacturers of oyster and fish knives demand this wood as they claim that handles made of it will not "slime." Mirror and glass polishers use aspen blocks to polish mirrors because it is soft and wears quickly and carries the polishing powder or "rouge" without clogging up and glazing over. In addition to the above, aspen wood has been reported for the manufacture of baskets, brush backs, dipper-handles, dishes, dowels, shoe-findings, spools, toothpicks and toys.

There are three cottonwoods found in this region, but as they are confined to river bottoms and only occur occasionally they are not of commercial importance compared to the two common poplars.

JACK PINE.

The existing stand of jack pine in the prairie provinces, including the lodgepole pine of western Alberta, is probably in the neighbourhood of 7,000,000,000 or 8,000,000,000 feet, board measure. The cut of lumber in 1913 was second only to that of spruce at 5,226,000 feet, board measure. In addition to the lumber produced the wood is utilized for railway ties. Canadian railways in 1913 reported purchasing over 7,000,000 ties of this wood, almost 40 per cent of their entire purchases; many of which were treated to retard decay. White and red pine are not found in these provinces in commercial quantities and as jack pine is abundant it is often used as a substitute for the more valuable pines. Almost all the lumber sawn is used in rough construction for frames of houses and frames and siding on barns and other rough buildings. When it enters the lumber market it is sold mixed with the red and white pine of the east or the bull pine and western white pine of British Columbia. It is not reported by any of the wood-using industries described in this bulletin. The wood of the jack pine (*Pinus divaricata*) is soft, light and weak, brittle and perishable. As the trees are often small and crooked with low branches the material is often knotty and otherwise defective. It is used elsewhere in Canada and in the United States for other purposes than rough dimension lumber, railway ties and fuel, although these are its chief uses.

The western jack pine or lodgepole pine (*Pinus Murrayana*) is a material with somewhat finer texture than the eastern wood. It is usually found only in small sizes and is often knotty and defective and is more difficult to season. It is used at present for rough dimension stock, and for mine timber, poles, ties, fencing and fuel.

The common jack pine is used in Ontario and Quebec together with spruce and fir in the manufacture of sulphate or kraft pulp. This pulp can be made of inferior species that would otherwise be useless on account of their resin. The wood is acted on by the chemicals used only long enough to break up the fibrous structure. The pulp produced is dark in colour, cannot be bleached, and is very tough and the paper made from it is used for wrapping purposes. It has been suggested that a rough, strong board made from this kraft pulp would be very useful for inside sheeting in settlers' houses on the prairies.

TAMARACK.

Tamarack is undoubtedly the most valuable wood found in the Prairie Provinces in commercial quantities. With the exception of an alpine species on the upper east slope of the Rocky mountains, the wood is all of one species (*Larix laricina*).

The tree grows usually in low, moist, swampy situations and does not reach the sizes attained by the other native commercial species. The wood is used more in the round than in the form of lumber and is valued for mining timbers, fencing and ties on account of its strength and durability, in which it easily surpasses the other native woods.

The present stand might be roughly estimated at 2,000,000,000 feet, board measure, which is made up of scattered groups or individual trees expensive to log and convert into lumber, but used locally in large quantities. In 1913 the mills of these provinces sawed 4,061,000 feet, board measure, of tamarack into lumber. The tamarack is subject to attack by an insect known as the larch sawfly (*Nematus erichsonii*) which destroys the foliage and in time kills the tree. This pest having almost exterminated the tamarack in the East is moving steadily westward and has already done considerable damage in the Prairie Provinces.

Tamarack lumber is used in Eastern Canada wherever it can be obtained in sufficient quantity for shipbuilding because of its strength and durability when exposed to moisture. The roots of the tree are roughly hewn and sold for ships knees, where the natural bend of the root can be taken advantage of. Smaller material is cut into "tree nails" which are used in place of metal for securing the planking and framework of a vessel. In addition the lumber is used for planking, decks, inside finish and framework. Many river boats in the Prairie Provinces have been built entirely of this wood.

For flooring in wagons, carts, and heavy vehicles few woods are better suited than tamarack, which is also used for reaches and box work.

In building construction the wood has general uses but is preferred for veranda work, foundation timber and stable flooring. Pump logs and heads are made of pine almost exclusively in the prairies, but tamarack is widely used in Ontario and the eastern provinces as it is a very compact wood which does not check or split and is very durable in moist situations.

BIRCH.

The only birch found in anything approaching commercial quantities in the Prairie Provinces is the paper or canoe birch (*Betula alba* var. *papyrifera*). The range of this tree is not perfectly understood in the west, where it is often confused with some of the less important western species. Its occurrence in any case is not general, and except for scattered stands, is seldom present in commercial quantities. This tree like the common poplars has been usually considered as a tree weed, although where its qualities are understood the wood has proved valuable for certain purposes.

The wood is weak and perishable compared to that of the other common hardwoods, but is valued because of its whiteness, softness and toughness in which it exceeds the hard birches of the east. The wood is light, compact, and fairly strong with reddish-brown heartwood and nearly white sapwood. In this region the wood is used at present chiefly for firewood.

In Eastern Canada and the United States its most important use is for small turnery. Spoolwood is cut into squares of various lengths which are loosely piled until well air dried, or kiln dried. These are exported in this form or manufactured into spools. The wood is valued for this purpose because of its compactness. It is fairly hard but does not dull the lathe tools. Spools made of this wood are smooth surfaced and hold their shape well.

Dowels for cabinet work are made on special machinery and used locally and exported in large quantities to Europe. Shoe pegs are either split out of blocks of

paper birch or cut from sliced birch veneer. Other veneer products such as shoeshanks, toothpicks, plates, baskets, etc., are made of this wood. Meat-skewers and clothes-pins are manufactured by highly specialized machinery and paper birch is a favourite raw material for these products. Excelsoir is also made of this wood in the Eastern States.

BALSAM FIR.

Balsam fir (*Abies balsamea*) is found throughout the region but is nowhere abundant in commercial sizes. In Alberta it meets and mixes with the Alpine fir of the Rocky mountains (*Abies lasiocarpa*). The wood of these two trees is very similar, being light in weight and colour, coarse in grain and texture and soft, weak and perishable when exposed. It is an excellent pulpwood, however, being colourless, free from resin and possessing the necessary length and strength of fibre. It yields about 10 per cent less pulp per cord than white spruce, but is used, where it is abundant, often to a greater extent than spruce. Canadian pulpmills in 1913 reported using 283,292 cords of balsam fir or over a quarter of their total wood consumption. Few mills use less than 15 per cent of this wood mixed with their spruce.

In the Maritime Provinces balsam fir lumber forms a cheap substitute for pine and spruce in many industries. It is a valuable slack cooperage wood for apple, flour, fish, sugar and lime barrels, and is sometimes used for tight cooperage.

In the round, balsam fir is used all over Canada for mining timbers chiefly because of its cheapness. It can be treated with preservatives and made much more useful for this purpose. It is also used for poles, fence material, railway ties and for fuel.

MINOR SPECIES.

Douglas fir is cut in small quantities on the east slope of the Rockies in Alberta, and is sold on the market with the material imported from British Columbia. The native burr oak (*Quercus macrocarpa*) is used locally for firewood, fence posts, etc., and is occasionally used for vehicle repairs. The Manitoba maple (*Acer Negundo*) is a valuable tree for prairie planting for windbreaks, shade or ornament, but its wood is of poor technical quality and it seldom reaches commercial size and is generally very crooked. White elm (*Ulmus americana*), basswood (*Tilia americana*) black ash (*Fraxinus nigra*), among the hardwoods and white pine (*Pinus strobus*), red pine, (*Pinus resinosa*) and white cedar (*Thuya occidentalis*) are all woods of high technical value, but their occurrence in these provinces is so rare, compared to the other native woods, that they cannot be considered as sources of raw material for new industries.

Photo. R. D. Craig.

White Spruce Log, 28 Inches in Diameter, Riding Mountain Forest Reserve.

This Tree stood in Sec. 28, Tp. 23, Rge. 19, west of the Principal Meridian, on the east Fork of Edwards Creek, and was 92 feet high.

Photo. N. M. Ross.

Natural Growth of Ash and Oak near Morden, Manitoba.

The tree on the left of the picture is Green Ash, that on the right Scrub Oak. The figure of a man, dimly showing on the left of the Oak, gives an idea of the size of the Trees.

COMMODITIES MANUFACTURED FROM EACH KIND OF WOOD.

ASH.

Automobiles,
  tonneau framework,
  top bows.
Boats,
  top bows.
Buggies,
  top bows.
Building Construction,
  interior finish.
Cars,
  posts.
Doubletrees.
Locomotives,
  cab windows.
Motor Ambulances,
  body frames.
Motor Busses,
  body frames.
Motor trucks,
  body frames.
Vehicles,
  body frames,
  gear stock.
Whiffletrees.

BASSWOOD.

Agricultural Implements.
Automobiles,
  tonneaus.
Building Construction,
  interior finish.
Cars,
  ceiling.
Fanning Mills.
Fixtures,
  drawer bottoms,
  inside work.
Furniture,
  drawer bottoms.
Grain Baggers.
Ironing-boards.
Separators.
Smut Machines.
Tables.
Vehicles,
  boxwork.

BEECH.

Cut Blocks.
Models.
Patterns.

BIRCH (UNSPECIFIED).

Boats,
  decking,
  finish.
Building Construction,
  doors,
  flooring,
  interior finish.
Cars,
  panels.
Cut Blocks.
Fanning Mills.
Fixtures,
  interior finish.
Furniture,
  frames.
Handles,
  broom,
  brush.
Locomotives,
  cab work.
Turnings.
Vehicles,
  body framework,
  box work,
  gear stock.
Washing Machines.

BIRCH (RED).

Building Construction,
  interior finish.
Fixtures.
Vehicles,
  body framework,
  box work,
  gear stock.

BOXWOOD.

Wood Engravings.

CEDAR.

Boats,
  planking.
Building Construction,
  balusters,
  casing,
  core stock,
  doors,
  exterior finish,
  flooring,
  interior finish,
  moulding,
  sash.
Caskets.
Dies.
Fixtures.
Furniture.
Motor Boats.
Signs.

CHERRY.

Building Construction,
  interior finish.
Cars,
  finish,
  siding.
Cut Blocks.
Models.
Patterns.

CHESTNUT.

Fixtures,
  core stock.
Vehicles,
  box work.

CIRCASSIAN WALNUT.

Fixtures.

COTTONWOOD.

Boxes.
Excelsior.
Vehicles,
  box work.

CYPRESS.

Boats,
  finish,
  planking.
Building Construction,
  doors,
  exterior finish,
  frames,
  interior finish,
  veranda work.
Fixtures.
Furniture.
Greenhouses.

DOUGLAS FIR.

Agricultural Implements,
  body framework,
  boxwork.
Awning Frames.
Boats,
  beams,
  ceiling,
  flooring,
  frames.
Building Construction,
  ceiling,
  doors,
  door jambs,
  exterior finish,
  flooring,
  frames,
  interior finish,
  moulding,

DOUGLAS FIR.—*Continued.*

stair work,
turnings,
window jambs,
window sills
Cars,
flooring,
sills.
Caskets.
Crates.
Crating.
Derricks,
gas-well,
oil well
Dump Racks.
Fire Engines
foot-boards
Fire Ladders.
Fixtures.
Furniture,
inside work.
Grain Tanks
Hay Racks.
Locomotives,
running-boards.
Mirror Frames.
Motor Ambulances,
body framework.
Motor Busses,
body framework.
Motor Trucks,
body framework.
Moulding Boxes.
Refrigerators,
outside finish.
Rough Boxes.
Saw Mill Machinery.
Separators,
framework.
Shells.
Show Cases.
Tanks.
Tank Bolsters.
Tongues.
Vehicles,
body framework,
box work.
Water Tanks.

ELM (UNSPECIFIED).

Cars,
framework.
Furniture,
frames.
Tables.
Vehicles,
body framework,
gear stock.

ELM (ROCK).

Automobiles,
body framework.
Boats,
frames.
Doubletrees.
Eveners.
Motor Boats.
Vehicles,
body framework,
gear stock.

GUM.

Building Construction,
interior finish.
Vehicles,
boxwork.

HEMLOCK.

Building Construction,
exterior finish,
frames,
interior finish.
Crates.
Crating.

HICKORY.

Agricultural Implements,
  framework.
Handles.
Singletrees.
Vehicles,
  axles,
  cross-bars,
  felloes,
  rims,
  poles.
  shafts,
  sills,
  spokes.

IRONWOOD.

Vehicles,
  gear stock.

MAHOGANY.

Building Construction,
  doors,
  interior finish.
Cars,
  inside finish.
Cut Blocks.
Fixtures.
Furniture.
Motor Boats,
  trimming.
Patterns.

MAPLE (UNSPECIFIED).

Building Construction,
  flooring,
  stair treads.
Cars,
  platform floors.
Chucks.
Crating.
Cut Blocks.
Fixtures.
Furniture,
  cot frames.
Motor Ambulances,
  body framework.
Motor Busses,
  body framework.
Motor Trucks,
  body framework.
Pump Handles.
Separators,
  frames.
Threshers.
Vehicles,
  axles,
  bolsters,
  sandboards.

MAPLE (HARD).

Building Construction,
  flooring,
  interior finish.
Fixtures.
Harrows.
Patterns.
Turnings.
Vehicles,
  axles,
  bolsters,
  sandboards.

OAK (UNSPECIFIED).

Agricultural Implements.
Automobiles,
  body framework,
  finish,
  top bows.
Boats,
  decks,
  frames,
  keels,
  top bows
Building Construction,
  balusters,
  flooring,
  interior finish,
  stair work,
  weatherstri
Cars,
  buffer
Casket

OAK (UNSPECIFIED).—*Continued.*

Cooperage,
  heading.
Doubletrees.
Eveners.
Fixtures.
Furniture.
Grain Picklers.
Locomotives,
  cabs.
  buffer beams.
  pilots.
Motor Ambulances.
Motor Boats.
Motor Busses,
  body work.
Refrigerators.
Sheaf Loaders.
Show Cases.
Threshers.
Trophy Shields.
Vehicles,
  poles.
  reaches.
  rims.
  top bows.
  spokes.

OAK (RED).

Building Construction,
  doors.
  flooring.
  interior finish.
Fire Engines,
  frames.
Fixtures.
Furniture.
Separators,
  frames.
Vehicles,
  body framework.
  gear stock.

OAK (WHITE).

Agricultural Implements.
Building Construction,
  doors.
  flooring.
  interior finish.
Cars,
  beams.
  bunks.
  carlines.
  dead-heads.
Cooperage,
  heading.
Doubletrees.
Fixtures.
Furniture.
Vehicles,
  hounds.
  reaches.
  rims.
  spokes.

PINE (UNSPECIFIED).

Boats.
Boxes.
Bill Boards.
Brooders.
Building Construction,
  balusters.
  blind stops.
  doors.
  exterior finish.
  flooring.
  frames.
  interior finish.
  sash.
  sash packing.
  screens.
  shelving.
Cars,
  boxwork.
  flooring.
Caskets.
Chicken Coops.
Crates.
Crating.
Egg Cases.
Fixtures,
  inside work.
Furniture.
Patterns.
Refrigerators,
  lining.
Signs.
Tables.
Tent Pegs.
Tent Poles.
Trophy Frames.
Vehicles,
  body work.
Water Tanks.

PINE (ALASKA). *See* HEMLOCK

PINE (BULL). *See* PINE (WESTERN YELLOW).

PINE (HARD).

Boats,
  decking,
  frames.
Furniture,
  frames.

PINE (JACK).

Boxes.
Building Construction.
Crating.

PINE (LONGLEAF). *See* PINE (HARD).

PINE (NORWAY). *See* PINE (RED).

PINE (PATTERN). *See* PINE (WHITE).

PINE (RED).

Boxes.
Building Construction,
  exterior finish,
  flooring,
  frames,
  interior finish,
  moulding,
  window screens.
Crating.
Dump Racks.
Furniture.
Grain Tanks.
Paving Blocks.
Templates.
Vehicles,
  body framework,
  boxwork.

PINE (WESTERN YELLOW).

Boats.
Building Construction,
  doors,
  finish,
  frames,
  sash.
Models.
Patterns.
Pumps,
  heads,
  logs,
  tubing.

PINE (WHITE).

Boats,
  finish,
  planking.
Boxes.
Brooders.
Building Construction,
  brackets,
  casing,
  cornice,
  doors,
  exterior finish,
  flooring,
  frames,
  interior finish,
  newel posts,
  moulding,
  porch columns,
  sash,
  screens,
  screen doors,
  window frames.
Crates.
Crating.
Fire Engines,
  poles,
  tool boxes.
Fixtures,
  inside work.
Foundry Boxes.
Furniture,
  frames.
Grain Picklers.
Grain Sprouters.
Incubators.
Models.
Nest Boxes.
Patterns.
Refrigerators.
Rough Boxes.
Templates.
Vehicles,
  box work.

POPLAR (UNSPECIFIED).

Boxes.
Cabinet Work
Caskets.
Crating.
Crates.
Egg Cases.
Excelsior.
Fixtures.
Furniture,
  frames.

POPLAR (WHITE).

Building Construction,
  flooring.
Pulp.

POPLAR (YELLOW). *See* TULIP.

SPANISH CEDAR.

Chests,
  moth proof.
Furniture.

SPRUCE.

Awning Frames.
Bill Boards.
Boats,
  planking.
Boxes
Building Construction,
  doors,
  door frames,
  exterior finish,
  flooring,
  frames,
  interior finish,
  moulding,
  sash,
  siding,
  shiplap,
  turnings,
  weatherstrip,
  window frames.
Casket Bottoms.
Cisterns.
Crates.
Crating.
Egg Cases.
Fanning Mills.
Fixtures.
Flasks.
Foundry Boxes.
Furniture,
  couch frames.
Grain Tanks.
Hay Racks.
Moulding Boxes.
Patterns.
Portable Elevators.
Pumps,
  heads.
Refrigerators,
  inside work.
Signs,
  frames.
Skids.
Smut Machines.
Tanks.
Trophies.
Vehicles,
  body work.
Water Tanks.
Water Troughs.

TAMARACK.

Boats,
  finish,
  frames,
  planking.
Boxes.
Building Construction,
  exterior finish,
  frames,
  stable flooring.
Crates.
Crating.
Egg Cases.
Fixtures.
Paving Blocks.
Pumps,
  tubing.
Vehicles,
  body work.

TEAK.

Boats.

TULIP.

Automobiles,
  body work.
Building Construction,
  interior finish,
  panels.
Cars,
  finish.
Fixtures.
Vehicles,
  body work.

WALNUT.

Boats,
  finish.
Building Construction,
  interior finish.
Fixtures.
Furniture.
Motor Ambulances,
  body work.
Motor Buses,
  body work.
Vehicles,
  boxwork.

WHITEWOOD. *See* TULIP.

CLASSIFIED DIRECTORY OF MANUFACTURERS.

N.B.—Where one firm made more than one class of commodity, a division of the information was necessary, and for this reason the name of a manufacturer in the directory may appear more than once, according to the number of different classes of products he manufactured.

AGRICULTURAL IMPLEMENTS.

Alberta.

Cardston Implement Co., Ltd., Cardston.
Fowler & Ofrim, Camrose.
Thomas, Wm., Brant.

Manitoba.

Brandon Machine Works, Brandon.
Cochrane Bros., Newdale.
Currie, W. J., Lauder.
Grain Separator Co., Elmwood, Winnipeg.
Gregg Mfg. Co., Ltd., Louise Bridge P. O., Winnipeg.
Hero Mfg. Co., Ltd., Johnston Ave., Winnipeg.
St. Amant, Geo., St. Jean Baptiste.
Spruhs, R., Sifton.

Saskatchewan.

Barber, B., Wolseley.
Croft, J. T., Carievale.
Farmers' Machine Co., Ltd., Watrous.
Smewing, W. G., Craven.
T. N. B. Mfg. Co., Watrous.
Wright, C. C. & Co., Birmingham.

BOATS.

Alberta.

Alberta Motor Boat Co., Ltd., Edmonton.
Michaelis, R. L., Edson.
Taylor & Collins, 30 Riverdale, Edmonton.

Manitoba.

Ackland, D. & Son, Ltd., 67 Higgins Ave., Winnipeg.
Auto Top & Supply Co., Ltd., King & James Sts., Winnipeg.
Lamont, D., Maple St., Melita.
Rosling, Howard & Co., 417 Scotland Ave., Winnipeg.
Selkirk Boat Co., Selkirk.
Western Boat Works, 346 Nairn Ave., Winnipeg.

Saskatchewan.

Ennis, W. F., Grenfell.

BOXES AND CRATING.

Alberta.

Capital City Box Co., Ltd., Edmonton.
Hayes Motor Car Co., Ltd., Consort.
Lethbridge Pattern & Planing Mills, 336 15th St. North, Lethbridge.
Reid, John & Sons, 117 7th Ave., W., Calgary.
Stettler Cigar Factory, Stettler.

Manitoba.

Arnett Furniture, Limited, Souris.
Bouey Bros., 201 Princess St., Winnipeg.
Brandon Fire Engine Co., Ltd., 17th St. & Rosser Ave., Brandon.
Campbell Heating Co., 367 Hargrave St., Winnipeg.
Canada Furniture Manufacturers, Ltd., 400 Portage Ave., Winnipeg
Canadian Lightning Arrester & Electric Co., 335 9th St., Brandon.
Clare & Brockest, Ltd., Winnipeg.
Crane & Ordway Co., 93 Lombard St., Winnipeg.
Czerwinski Box Co., Ltd., Cor. Logan & Tecumseh, Winnipeg.
Darling Bros., Ltd., 303 Owena St., Winnipeg.
Davie & Small, Mather.
Dingle & Stewart, Logan & Stanley Sts., Winnipeg.
Dominion Bridge Co., Winnipeg.
Dominion Radiator Co., 60 Victoria St., Winnipeg.
Doty Engine Works Co. of Winnipeg, Limited, Water St., Winnipeg.
Ford Motor Co., 81-83 Water St., Winnipeg.
Grain Separator Co., Elmwood, Winnipeg.
Grand Trunk Pacific Ry., Transcona.
Hanbury Mfg. Co., Ltd., Assiniboine Ave., Brandon.
Hero Mfg Co., Ltd., Johnston Ave., Winnipeg.
Hughes Electric Heating Co., 902 Horne St., Winnipeg.
Impieral Oil Co., Ltd., Logan Ave., Winnipeg.
Irish Railways Canadian & General Contractors Agency, 71 Scott Block, Winnipeg.
Leslie's, 324 Main St., Winnipeg.
Lyon-Monkhouse, Limited, Winnipeg.
Marble & Tile Co. of Canada, Ltd., St. Jean Baptiste St., St. Boniface
Martwell Mfg. Co., Ltd., Winnipeg.
McLean, J. J. H. & Co., Ltd., Portage & Hargrave Sts., Winnipeg.
A. B. Ormsby Co., Ltd., 677 Notre Dame, Winnipeg.
Penner Bros., Steinbach.
Prairie Glass Co., Ltd., Good St., Winnipeg.
Rat Portage Lumber Co., Winnipeg.
Robinson, W[illegible] Co., Ltd., Selkirk.
Sheet Metal [illegible]oducts Co. of Canada, Ltd., 111 Lombard St., Winnipeg.
Standard Lumber Co. of Manitoba, Ltd., Winnipegosis.
Tose, Frank, 179 Fort St., Winnipeg.
Western Supply & Mfg. Co., Pacific Ave., Yeoman St., Winnipeg.
Winnipeg Ceiling & Roofing Co., St. Boniface, Box 2186, Winnipeg
Winnipeg Wire & Iron Works, Arlington & Portage, Winnipeg.

Saskatchewan.

Western Mfg. Co., Ltd., Dewdney St., Regina.

COFFINS, CASKETS AND SHELLS.

Alberta.

Graham & Thompson, Ltd., 609-11 Centre St., Calgary.

Manitoba.

Winnipeg Casket Co., Cor. Dufferin & Parr, Winnipeg.

Saskatchewan.

Saskatchewan Furniture Co., Weyburn.

FIXTURES.

Alberta.

Calgary Woodworking Co., Calgary.
Clark, W. H. & Co. Ltd., 9th St., Edmonton.
Cushing, A. B. Lumber Co. Ltd., 1301-10th Ave. W., Calgary.
Edmonton Plate Glass & Mirror Co. Cor. 105th St. & 105th Ave., Edmonton.
Edmonton Show Case Works, 12,122-110th Ave., Edmonton.
Lethbridge Patern & Planing Mill, 336-15th St. N. Lethbridge.
Medicine Hat Planing Mill Co. Ltd., Medicine Hat.
Northern Lumber Co., Cor. Cleeve & Murray, Edmonton.
Parker, S. G. & Son, 621 Kinistino, Edmonton.
Preston, J. H. Planing Mills, Medicine Hat.
Smith Bros. & Wilson, Ltd., 540, 8th St. South, Lethbridge.
Watt, H. A. & Co, 10,054, 108th St., Edmonton.
Western Woodworkers, 13th St. E. & 12th Ave. E., Calgary.

Manitoba.

Arnett Furniture, Limited, Souris.
Civel & Co., 311 McGee St., Winnipeg.
Clements, G. E. 643, 10th St. Brandon.
Cusson Lumber Co., Ltd., Provencher & des Meuron Sts. St. Boniface.
Czerwinski Box Co. Ltd., Cor. Logan & Tecumseh, Winnipeg.
Hanbury Mfg., Co. Ltd., Assiniboine Ave., Brandon.
Murray, G. W. Co. Ltd., Market & Bertha Sts., Winnipeg.
Rat Portage Lumber Co., Winnipeg.
Retaule & Crane, 236 Fort St., Winnipeg.
Ryan Bros., 110 James St., Winnipeg.
St. John Cabinet & Supply Co., Ltd., Bannerman & McGregor Sts., Winnipeg.
Sprague Lumber Co. Ltd., 47 Higgins Ave., Winnipeg.

Saskatchewan.

Cushing Bros., Ltd., cor. McIntyre & Dewdney, Regina.
Cushing Bros., Ltd., Saskatoon.
Gillstrom Contracting Co., Box 188, Swift Current.
Interior Finish Co., Ltd., Saskatoon.
North Battleford Mfg. Co., Ltd., Cor. Ave. C and Henry St., North Battleford.
Western Mfg., Co., Ltd., Dewdney St., Regina.

FURNITURE.

Alberta.

Holt, Henry, Cardston.
Pheasey & Batson, Ltd., Howard Ave., Edmonton.
Reid, John & Sons, 117-7th Ave., W., Calgary.
Watt, H. A. & Co., 10054-108th St., Edmonton.

Manitoba.

Campbell & Campbell, Rosser Ave., & 10th St., Brandon.
Czerwinski Box Co., Ltd., Logan & Tecumseh, Winnipeg
Furnival, W. G. 312 Colony St., Winnipeg.
Grand Trunk Pacific Ry. Transcona.
Hanbury Mfg., Co., Ltd., Assiniboine Ave., Brandon.
Leslie's, 324 Main St., Winnipeg.
Munro Steel & Iron Works, Ltd., Graham Ave., Winnipeg.
Murray, G. W. Co., Ltd., Market & Bertha Sts., Winnipeg.
Penner Bros., Steinbach.
Rat Portage Lumber Co., Winnipeg.
Ryan Bros., 110 James St.,Winnipeg.
Taylor, William, 95 Grove St., Winnipeg.

Saskatchewan.

Blair, W. H., Box 364, Davidson.
Interior Finish Co., Ltd., Saskatoon.
Peters, J. K., First St., Osler.
Saskatchewan Furniture Co., Weyburn.

PATTERNS AND FOUNDRY BOXES.

Alberta.

Alberta Foundry & Machine Co., Ltd., Medicine Hat.
Alberta Ornamental Iron Co., Redcliff.
Hayes Motor Car Co., Ltd., Consort.
International Supply Co., Medicine Hat.
Lethbridge Pattern & Planing Mill, 336 15th St. North, Lethbridge.
Martin, O. S., Sedgewick.
Nichols Bros., 10,103 95th St., Edmonton.
Union Iron Works, Ltd., 14th St. E., Calgary.
Western Foundry & Machine Co., Ltd., North Edmonton.

Manitoba.

Brandon Machine Works, Brandon.
Grand Trunk Pacific Ry., Transcona.
Manitoba Bridge & Iron Works, Limited, Logan Ave., W. Winnipeg.
Vulcan Iron Works, Ltd., Pt. Douglas Ave., Winnipeg.
Winnipeg Pattern & Model Works, Water St., Winnipeg.

PUMPS, TANKS, CISTERNS AND [illegible]

Alberta.

Alberta Steel Products Co., Ltd., Dunmore.
Carlsen, A., Brooks.
Fowler & Ofrim, Camrose.
Larvik, H. C. Cereal.

Manitoba.

Brandon Pump & Windmill Works, 239 9th St., Brandon.
Lamont, D., Maple St., Melita.

Manitoba Wind Machine & Pump Co., Ltd., 8th St., North, Brandon.
Martens, J. H., Lowe Farm.
Morrell, Chas., Arden.
Penner Bros., Steinbach.
Rasmuson, R. C. Oberon.
Simpson, F., Benito.

Saskatchewan.

Barber, B., Wolseley.
Brown, T. G., Sash and Door Factory, Cor. Lillooet St. and Sixth Ave., Moose Jaw
Brown & Tilley, 44 Main Ave., Girvin.
Farmers' Machine Co., Ltd., Watrous.
Fletcher & Coyer, Stoughton.
Greenwood, J. Kisbey.
Henderson, R. A., James St. Bounty.
Radisson Iron Works, Radisson.
Schmidt, Geo. J. Langham.
Springett, Chas., Box 242, Belle Plaine.

SASH, DOORS AND MILLWORK.

Alberta.

Alberta Sash & Door Co., Calgary.
Baird & McKenzie, Red Deer.
Caledonian Saw Mills, 12004, 10th Ave. W., Calgary.
Clark, W. H. & Co., Ltd., 9th St., Edmonton.
Cooper Lyons Lumber Co., 7342 103rd St., Edmonton South.
Cushing, A. B. Lumber Co., Ltd., 1301 10th Ave. W., Calgary.
Cushing Bros., Limited, 702 4th St. W., Calgary.
Cushing Bros., Limited, Edmonton.
Gordon, Chas., 1st Ave. E., Vegreville.
Johnston, Arvil G., Warner.
Lethbridge Pattern & Planing Mill, 336 15th St. North, Lethbridge.
Lye, A P., Mountain View.
Medicine Hat Planing Mills Co.,Ltd., Medicine Hat.
Northern Lumber Co., Cleeve & Murray Sts., Edmonton
Pheasey & Batson, Ltd., Howard Ave., Edmonton.
Preston, J. H. Planing Mills, Medicine Hat.
Redcliff Woodworkers, Ltd., Redcliff.
Rendall-McKay-Michie, Ltd., 249 Wilson St., Edmonton.
Riverside Lumber Co., Ltd., Box 461, Calgary.
Smith Bros. & Wilson, Ltd., 540 8th St. South, Lethbride.
Stacey Lumber Co., Cardston.
Turner Bros. & Clendinin, 51 Macauley St., Edmonton.
West Dalton Planing Mill, 2058 Otter St., Edmonton.
Western Planing Mills Co., Ltd., 9th Ave. & 5th St., Calgary.

Manitoba.

Ackland, D. & Son, Ltd., 67 Higgins Ave., Winnipeg.
Acme Sash & Door Co., Ltd., 304-320 DesMeurons St., Norwood, Winnipeg.
Brandon Construction Co., Ltd., Princess Ave., Brandon.
Caverly & Sons, Bowsman River.

Chamberlain Metal Weather Strip Agency of Winnipeg, Scott Block, Winnipeg
Cooper Bros., Stonewall.
Cusson Lumber Co., Ltd., Provencher & des Meurons Sts., St. Boniface.
Demontigny, Alphonse, Ste. Anne.
Dowse Sash & Door Co., Ltd., Notre Dame & Tache Sts., St. Boniface.
Fonseca Roofing & Sheet Metal Co., Gordon Ave., Elmwood, Winnipeg.
Fraser Geo., Minnedosa.
Hafenbrak & Steen, Front St., Dauphin.
Magee, R. & Son, Manitou.
McDiarmid & Clark, Ltd., 7th & Princess, Brandon.
Metallic Roofing Co., 797 Notre Dame Ave., Winnipeg.
A. B. Ormsby Co., Ltd., 677 Notre Dame Ave., Winnipeg.
Ostrum, L. R., Durban.
Penner Bros., Steinbach.
Radford-Wright Co., Ltd., McPhillips, St., Winnipeg.
Rat Portage Lumber Co., Winnipeg.
Renuart, A., St Pierre.
St. John Cabinet & Supply Co., Ltd., Cor. Bannerman & McGregor Sts., Winnipeg.
Simpson, F., Benito.
Taylor, Wm., 95 Grove St., Winnipeg.
Winnipeg Paint & Glass Co., 169-71 Notre Dame East, Winnipeg.
Winnipeg Steel Granary & Culvert Co., St. Boniface.
Winnipeg Woodworking Co., 828 Beresford Ave., Winnipeg.

Saskatchewan.

Alford's Planing Mill, 632 10th St., Saskatoon.
Brown, T. G., Sash & Door Factory, Cor. Lillooet St. & Sixth Ave., Moose Jaw.
Cushing Bros., Ltd., McIntyre & Dewdney Sts., Regina.
Cushing Bros., Ltd., Saskatoon.
Francis & Wheat, Box 252, Swift Current.
Gillstrom Contracting Co. Box 188, Swift Current.
Great West Planing Mills, Box 420, Moose Jaw.
Greenwood, J., Kisbey.
Hamilton, A. B., Ebert St., Indian Head.
Indian Head Planing Mill, Box 518, Indian Head.
Interior Finish Co., Ltd., Saskatoon.
Logan & Black, Laurier Ave., Yorkton.
Melfort Planing Mill, Main St., Melfort.
Meyer, G. A. Co., Ltd., 17th St. W., Prince Albert.
North Battleford Mfg. Co., Ltd., Cor. Ave. "C" & Henry St., North Battleford
Northern Planing Mills, Ltd., Ave. "C" & 21st St., Saskatoon.
Schmidt, Geo. J., Langham.
Stroud, E. H., Box 124, Biggar.
Stuvrud, O. J., First St. W., Wadena.
Western Mfg. Co., Ltd., Dewdney St., Regina.
Weyburn Sash, Door & Glass Co., Weyburn.
Wilker & Son, Rosthern.

SIGNS.

Manitoba.

Baxter Sign Co., 184 James St., Winnipeg.
Johnston, W., 537 Main St., Winnipeg.
Ruddy-Koester Co., Ltd., 460 Logan Ave., Winnipeg.
Sun Sign Co., 150 Pacific Ave., Winnipeg.
Syme & Jackson, 106 Higgins Ave., Winnipeg.

VEHICLES AND CARS

Alberta.

Archibald, L. D., Box 125, Nanton.
Barron, W. J., Erskine.
Bow Island Blacksmithing Co., Box 175, Bow Island
Burdett, Thos., Bassano.
Beek W. C., New Dayton.
Carlsen, A., Brooks.
Comm, M., Leduc.
Daysland Machine Shop & Garage, Daysland.
Eastman, W., Ryley.
Emde, Wm. J., Coaldale.
Fowler, J. P., Box 295, Lethbridge.
Fowler & Ofrim, Camrose.
Fuller & Land, 314 Ross st., Edmonton.
Griffin, H., Flowerdale.
Halmrast, Carl, Warner.
Hayes Motor Car Co., Ltd., Consort.
Hosey, P., Faber.
Korngerbel, John H., 14 York St., Edmonton.
Larvik, H. C., Cereal.
Lindsay & Holmes, Box 44, Olds.
Lye, A. P., Mountain View.
Murray, F. W., Walsh.
McDonald, D. A., Stavley.
McKenzie, L. S., Lousana.
Michaelis, R. L., Edson.
Oldsen & Kjeldson, Box 21, Irricana.
Peterson, N. A., Hillspring.
Redcliff Motors Co., Ltd., Redcliff.
Richier Auto Top Co., 9530 Jasper ave., Edmonton.
Smith, Wm., High River.
Springbelt, Wm., 2nd St, S. Red Deer.
Watson, Andrew, 507 10th St., Medicine Hat.
Western Carriage Works, 632 17th Ave. W., Calgary.
Western Woodworkers, 13th St & 12th Ave. E., Calgary.

Manitoba.

Ackland, D. & Son, Ltd., 67 Higgins ave., Winnipeg.
Aitchison, John, Alexander.
Auto Top & Supply Co., Ltd., King & James Sts., Winnipeg.
Boyce Carriage Co., 325 Elgin Ave., Winnipeg.
Belanger, J. D., Eli.
Brandon Fire Engine Co., Ltd., 17th St. & Rosser Ave., Brandon.
Dewart, Jos., Dewart St., Elva.
Eccles, Wm., Box 74, Gladstone.
Evans, R. W., Shoal Lake.
Good & Hartwell, Lenore.
Grand Trunk Pacific Railway, Transcona.
Gregg Manufacturing Co., Ltd., Louise Bridge P. O., Winnipeg.
Hattie, Donald S., Winnipegosis St., Winnipegosis.
Hawthorne, R., Miniota.
Hayes, Bruce, Altamont.
Jackson, L., Fortier.

Lamont, D., Maple St., Melita
Lee, James, Treherne
Martens, J. H., Lowe Farm.
Mathews, Alfred, Deepdale
Maughan, Joseph, Rosebank.
McArthur, M., 122 Charlotte St., Winnipeg
McKenzie, D. B., Winnipeg.
McKenzie, Robt., Roland
McLeod & Burton, Virden.
Midland Railway Co. of Manitoba, Winnipeg
Montgomery, W. G., Minto
Morrell, Chas., Arden.
Parker, W. H., Box 106, Dominion City
Porter, Walter, Elm Creek.
Rasmuson, R. C., Oberon.
Rusaw, Fred., Morris Ave., Gladstone.
St. Amant, Geo., St. Jean Baptiste.
Sangster Bros., 100 Higgins Ave., Winnipeg
Shaw, Walter, Fairfax.
Sutherland, Dan, Fox Warren.
Walls, Chas. E., Mowbray.
Wawanesa Wagon Seat Co., Wawanesa.
Wheaton, Edwin, Eden.
Winnipeg Electric Ry. Co., Winnipeg.
Winkler, Carl, Main St., Harmsworth.

Saskatchewan.

Allan, Alex., Unity.
Ambrose, Wm., Cabri.
Babcock, L. J., Eyebrow.
Bakrind Bros., Neville.
Beazley, A. H., McLean.
Blair, W. H., Box 361 Davidson.
Briggs & Griffin, Sherbrooke St., Wolseley.
Brown & Tilley, 44 Main Ave., Girvin.
City Blacksmith & Carriage Works, Box 66, Swift Current.
Corrin, W. J., Earl Grey.
Cottis, W. H., Box 99, Carnduff.
Currie, Wm., Tugaske.
Dahl, G., Flaxcombe.
Davis, W. P., Alameda.
Dinker, Henry, Duval.
Dupont, Chas., Simpson.
Ennis, E. F., Grenfell.
Farmers' Machine Co., Ltd., Watrous.
Fletcher & Coyer, Stoughton.
Forcier, E. M., East End.
Foster, Jas., Weyburn.
Gaboriau, H. P., Denzil.
Gemmell, R., Findlater.
Greabeiel, Jos. W. & Son, Cardell.
Greenwood, J., Kisbey.
Harten, James, Success.
Henderson, R. A., James St., Bounty.
Hillary, W. G., 21st St., W.C.A., Battleford.
Indian Head Planing Mill, Box 518, Indian Head.
Irwin & Armstrong, 9th Ave., Moose Jaw.

Johnston, T. L., Birch Hills.
Kargut, B., Langham.
Marr, Oscar, Box 248, Gull Lake.
Menley, Philip, Lemberg.
Newman, J., Carlyle.
Olson, Nels., Guernsey
Patterson, Geo. N., Woodrow.
Peters, J. K., First St., Osler.
Pilon, J. & Son, Melville.
Radisson Iron Works, Radisson.
Reid, Robt., Broderick.
Reinhart, W. J., Spring Valley.
Sadler, T. W., Drake.
Scowen, Dennis, Avonlea.
Seymour, D. G., Glasnevin.
Shier, R. D., Bulyea.
Sheppard, A., Biggar.
Smewing, W. G., Craven.
Springett, Chas., Box 242, Belle Plaine.
Stovin, Walter, Carnduff.
Stuvrud, O. J., First St. W., Wadena
Wright, C. C. & Co., Birmingham.

MISCELLANEOUS.

Alberta.

Alaska Western Bedding Co., Ltd., 5th Ave. & 5th St. E., Calgary.
American Paper Box Co., 2nd Ave. & 6th St. W., Calgary.
Byron-May Co., Ltd., Howard & Elizabeth Sts., Edmonton.
Edmonton Plate Glass & Mirror Co., Cor. 105th St. & 105th Ave., Edmonton.
Edmonton Tent & Mattress Co., Ltd., 10123 102nd St. Edmonton.
Holt, Henry, Cardston.
International Supply Co., Medicine Hat.
Martin, Alex., Sporting Goods Co., Ltd., 231 8th Ave. E., Calgary.
McDermid Engraving Co., Ltd., 123 Rice St. (Box 182), Edmonton.
Western Tent & Mattress Co., 131-133, 10th Ave. E., Calgary.

Manitoba.

Ackland, D. & Son, Ltd., 67 Higgins Ave., Winnipeg.
Brandon Tent & Awning Works, 351-5th St., Brandon.
Brett Mfg. Co., Ltd., 592 Erin St., Winnipeg.
Bromilon, Geo., 222 McDermot Ave., Winnipeg.
Currie, W. J., Lauder.
Demontigny, Alphonse, Ste. Anne.
Dominion Gypsum Co., Ltd., 510-511 Electric Ry. Chambers, Winnipeg.
The Dominion Tar & Chemical Co., Ltd., Box D, Transcona.
Elmwood Cooperage, 97 Talbot Ave., Winnipeg.
Garry Mfg. Co., 120 Lombard St., Winnipeg.
Hero Mfg. Co., Ltd., Johnson Ave., Winnipeg.
Manitoba Cooperage Co., 684 Logan Ave., Winnipeg.
Matthews-Laing, Ltd., James & Louise Ave., Winnipeg.
Paul, Peter, 690 Selkirk Ave., Winnipeg.
t Portage Lumber Co., Winnipeg.
reed, Thomson Engraving, Ltd., Ryan Commercial Bldg., Winnipeg.

Stovel Co., Ltd., McDermont & Arthur Sts., Winnipeg.
Tose, Frank, 179 Ford St., Winnipeg.
Wellwood, F. O. J., 352 Poplar Ave., Winnipeg.
Winnipeg Broom Manufacturing Co., Ltd., 596 Manitoba Ave., Winnipeg.

Saskatchewan.

Dudley, F., 4th Ave., Yorkton.
Hayes, R., Yorkton.
Regina Engraving Co., Scarth St., Regina.

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(Being Bulletins 38, 39 and 40.)
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